



# Spiders of the United Arab Emirates: An Introductory Catalogue

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## Abstract

The spider fauna of the UAE has been little studied to date. A selection of more than 85 common and/or distinctive spiders found in the UAE, representing more than 55 genera in 24 families, is indexed, described and illustrated here in order to stimulate appreciation and further attention. Basic habitat and behavioural data are included for most entries. Taxonomic determinations are in many cases provisional and indicative, not definitive.

The catalogue entries include many spiders that are cosmopolitan or regionally widespread as well as others that are so far known only from the UAE and/or adjacent countries. Several entries represent first published records for the UAE, but that is not surprising given the current state of our knowledge.

Additional UAE spider records contained in a number of recent publications, covering eight families and 53 species, are included in the index as a convenience, since together the catalogue and those records constitute the vast majority of UAE spider records to date.

## Introduction

### SPIDER STUDIES IN THE UAE

Spiders (Order Araneae) remain one of the least studied of the commonly recognised animal groups found in the UAE. No dedicated collection effort has yet been undertaken nor has any attempt at a summary account been published. A modest collection of spiders from Abu Dhabi emirate was assembled in the early 1990s by Dr. Barbara Tigar, then of the National Avian Research Centre (NARC). The bulk of that collection was deposited with major international research institutions, but little of the NARC material has yet been studied or published.

More recently, general collection of arthropods by the UAE Insect Project has resulted in taxonomic accounts of five spider families: (i) Salticidae or jumping spiders, including 34 species in 21 genera, of which 12 were new to science (Wesolowska & van Harten 2010, 2011); (ii) Linyphiidae or dwarf and sheet-web spiders (a large but poorly-known family), including 7 species in 5 genera, of which 4 are widespread but 3 were new to science (Tanasevitch 2010); (iii) Zodariidae, small soil-dwelling spiders, many of which feed on ants, including 4 species in 4 genera, of which 3 were new to science (Jocqué 2011); (iv) Philodromidae, the philodromid or running crab spiders, including 10 species in 3 genera, of which 1 was new to science (Logunov 2011); and (v) Lycosidae or wolf spiders, including 17 species, of which 3 are new to science (Alderweireldt & Jocqué *in press*).

### SPIDER IDENTIFICATION

Spiders are an extremely speciose group. More than 45,000 species in 114 families are currently recognised (World Spider Catalog 2015), making the Araneae one of the most diverse orders among all

organisms (Sebastian & Peter 2009), and it is possible that an equal number of species remain to be discovered or distinguished.

The identification and classification of spiders, like the taxonomy of most arthropod groups, is very much a matter for specialists in the first instance. In many cases spiders can be identified to family by examination of the arrangement of the eyes and selected aspects of gross morphology, sometimes coupled with behavioural phenomena such as web or burrow construction. At the species level, however, spider taxonomy typically relies on features requiring microscopic examination, particularly the anatomy of the male and female reproductive structures. For this reason mature specimens are required; in their absence, spider taxonomists sometimes resort to the technique of trying to raise juvenile specimens to adulthood. It is only once these fundamental relationships have been sorted out that it may become possible, within known spider faunas, to rely on associated macroscopic features to make confident determinations. Otherwise, macroscopic features visible in the field or in hand are often not a reliable basis for positive identification.

One measure of the difficulty of spider taxonomy is the exceptional differentiation that may be found at the species level. It is not unusual for spider genera to contain several dozen or more recognised species, and a number of genera contain hundreds of species. The numbers are most extreme for families which have large numbers of genera, such as Araneidae (orb-weavers) or Theridiidae (cobweb weavers). The family Araneidae includes more than 160 genera, of which the genus *Araneus* contains more than 650 species, and the family Theridiidae includes more than 120 genera, of which the genus *Theridion* contains more



than 580 species. But the same phenomenon can be seen in families which have only a small number of genera. For example, the family Philodromidae (hunting crab spiders) includes 30 genera, but the genus *Philodromus* contains more than 240 species. Similarly, the family Oxyopidae (lynx spiders) includes 9 genera but the genus *Oxyopes* contains more than 300 species. And the family Scytodidae (spitting spiders) includes only 5 genera, but the genus *Scytodes* contains more than 220 species. (All of the preceding figures are from World Spider Catalog 2015.)

Apart from the sheer magnitude of such diversity, potential problems of identification include the following: (i) Colour patterns can be variable within a single species. (ii) Different elements of the same pattern may be variably emphasised or suppressed in different individuals. (iii) Certain patterns are common to a great variety of spiders, for example, median or paired dorso-lateral stripes or rows of spots. (iv) The appearance of spider specimens can change dramatically from life to laboratory, and from dry conditions to “wet”, i.e., immersion in liquid preservative, as is customary. (v) The apparent colours of specimens can vary tremendously with lighting, especially in the case of night photography. Most of the foregoing phenomena are illustrated in one or another of the figures accompanying our catalogue entries.

Sexual dimorphism further complicates spider identification. In some spider families, males and females may be entirely different in size, shape and colouration. In many other families, the physical proportions of males and females are different, males typically having relatively longer legs and smaller bodies, including smaller, thinner abdomens.

As a result, amateur enthusiasts relying on macroscopic features, and in some cases even acknowledged spider experts, must often be satisfied with a tentative identification, sometimes only to genus or even family. This is particularly true when investigating the spider fauna of an area, such as the UAE, that has not previously received much specialist attention. The figures mentioned above for the five families of UAE spiders that have received concerted expert study demonstrate this point: between 10% and 75% of the species collected in those groups have proven to be new to science.

Notwithstanding the foregoing cautions, many species are in fact visually distinctive, and many others, although less distinctive, can be discriminated by conscientious and informed field observers, once expert study has permitted recognition of the macroscopic features that can be used to distinguish them reliably. However, even such visually diagnostic features are often best observed under magnification, for example, by using a hand lens or macro-photography. The small size of many spiders, and the popular reluctance to capture or handle them (as well as the difficulty of doing so), have been historical impediments to serious amateur attention. In addition,

it is relatively difficult to preserve spiders for home or laboratory examination because (unlike most insects, which have hard exoskeletons) they cannot simply be dried and pinned but must be stored in liquid preservative, usually 70-80% alcohol (either ethyl alcohol or isopropyl alcohol), in glass specimen tubes with watertight stoppers.

Biogeography can sometimes play a supporting role in spider identification. Many spider taxa are associated with particular ranges, so that the identification of unknowns may be facilitated or constrained by considering the locality at which they have been found. Other spider species, however, have extensive global ranges, probably facilitated by dispersal via ballooning\* and by human agency (usually inadvertent). Despite the perceived rigours of the UAE environment, a significant proportion of its spider fauna may fall within this latter category.

[\*Many spiders can transport themselves, at least as juveniles, by “ballooning”: the spider climbs to a strategic location, elevated and exposed, and releases a strand of fine silk on which it is carried aloft by the wind.]

More than one-third of the species represented in our catalogue can fairly be said to have a widespread or regionally widespread range, i.e., a distribution that is either Holarctic, Palaearctic, Eastern Palaearctic, Oriental, Eremic (the arid and semi-arid regions of the Mediterranean, North Africa, Near East, Arabia, and Central and South Asia), Afrotropical or cosmopolitan. The diversity of those ranges is a testament to the UAE's strategic location at the crossroads between the Palaearctic, Oriental and Afrotropical biogeographical regions, and within the superimposed Eremic zone (Larsen 1984), which overlaps the boundaries between them. However, it should be expressly recognised that the approach we have taken in the catalogue, which attempts to signal apparent taxonomic affinities by suggesting indicative identifications, is inevitably biased in favour of more widespread and better-known species at the expense of possible cryptic species.

Some of those widespread species are consistent in colouration and markings throughout their distribution (e.g., the pholcid or Daddy Long-Legs species *Physocyclus globosus* and *Crossopriza lyoni*). Others, however, may vary substantially throughout their range in colour and patterning – the features most readily apparent to field observers – making confident field identifications a problematic exercise in the absence of established local experience. An example of the latter phenomenon is *Tetragnatha extensa*, a Holarctic long-jawed spider, of which many regional subspecies have been named. Still other species found in the UAE are notoriously variable in appearance even on a local scale, e.g., the pan-tropical jumping spider *Plexippus paykulli* or the velvet spider *Stegodyphus lineatus*.

The advent of digital photography and continuing advances in imaging technology have made it much easier to study, compare and identify spiders and other arthropods from photographs taken in the field, greatly enhancing the ability of amateur enthusiasts to contribute to knowledge of the spider fauna worldwide, and the ranges, habitats and behaviours of individual species. At the same time the development of the internet has greatly expanded access to such information, reversing its former restriction to specialists. In particular, there has been a proliferation of images of spiders (and many other taxa) available online. These represent a tremendous asset, but they must be used judiciously. Identifications of spider images displayed on non-specialist sites, or even on dedicated sites without expert moderation, must be treated with great caution, especially when they relate to spiders from countries or regions that have not been well studied by specialists.

All of the above cautions apply to our own efforts. We are experienced UAE naturalists but not spider taxonomists. Although we have collected and examined specimens for approximately two-thirds of the UAE spiders catalogued here, we have obtained only a small number of specialist identifications. In the index and accounts presented below, a few spiders have been identified only to family, others to genus or indicative genus (indicated by the use of "cf."), and still others to species or indicative species (similarly indicated by the use of "cf."). In each case, we have tried to indicate the basis for the identification we have given, so that the potential for error can be evaluated independently. We feel that, in the circumstances, this approach best balances the need for prudence in treating an unstudied spider fauna against the desire to make the most useful record of the evidence available to us.

## AN INTRODUCTORY CATALOGUE OF UAE SPIDERS

With the above qualifications in mind, we present here a selective catalogue of some of the most distinctive and/or commonly-encountered spiders found in the UAE, with provisional identifications and brief commentary on habitat and behaviour. The index is set out below at pages 8 - 11.

The catalogue builds on opportunistic observation of the UAE spider fauna by GRF over more than 20 years, but it is primarily the product of dedicated attention by the authors jointly from 2012 through 2015, including a program of field visits to diverse environments, photographic recording, collection and examination of specimens, and literature research (including online sites and images), supplemented by expert advice as noted in the text and acknowledgements. Our joint field work was concentrated in Dubai and the Northern Emirates. Information from Abu Dhabi Emirate relies on GRF's earlier observations and third party records. All collecting was performed by hand and almost all of the

accompanying photographs were taken by the authors (see text box, this page, for details of our photographic equipment and techniques).

It should be emphasised that the catalogue is an introductory account. Our investigations have included a diverse spectrum of natural habitats as well as plantations, parks and other synanthropic environments, including homes and buildings. The spider fauna that we have catalogued comprises more than 85 species in more than 55 genera and 24 families, but this represents only a fraction of the spider fauna of the UAE and is biased towards larger species and those that are more common, conspicuous, distinctive or noteworthy for other reasons.

To put our catalogue numbers in context, we estimate that the total number of spider species present in the UAE is in the range of 300-500 (see text box, next page). The results of the UAE Insect Project have emphasised that the arthropod biodiversity of the UAE exceeds estimates based on superficial reference to its small size and generally arid climate, and reflects the country's distinctive biogeographical position, highlighted above. For comparison, the spider fauna of the United Kingdom is generally estimated to be about 600 species. A recent, unpublished estimate for Iran is 1,020 or more species (A. Zamani, *pers. comm.*). Comparison with other neighbouring countries is not meaningful due to lack of study there; the latest list for Saudi Arabia includes only 77 spider species (El-Hennawy 2014).

### A NOTE ABOUT OUR SPIDER PHOTOGRAPHS

Almost all of the photographs accompanying this catalogue were taken by the authors. It is not easy to photograph spiders in the wild, especially at night, nor is it easy to take useful photographs of captive spiders or preserved specimens. Nevertheless, our photographs were absolutely critical in enabling us to study, compare and attempt to identify the many different spiders we encountered in the UAE, as well as in presenting our results in an engaging and accessible way to an educated but non-specialist audience.

In the field, BR was grateful to find that his Canon 60D camera, combined with a Canon 100mm macro f2.8 non-IS USM lens, worked well in almost all circumstances. The built-in flash was used on a number of occasions, as were macro converters. A ring flash didn't serve as well as expected, although it proved useful for spotting spiders in the field without disturbing them. For indoor photography of specimens, BR's Raynox DSR-250 super-macro lens combined with a Canon 50mm f1.8 lens gave impressive results.

GRF's early photos were taken as colour slides, from 1997 through 2009 with a Canon EOS 500, and before that with an Olympus OM-1, in each case using a +3 close-up filter and Ektachrome or Fujichrome film with 100 to 200 ASA. Those slides were digitised at high resolution for study and publication. GRF's more recent photos were taken with a Canon PowerShot G12 digital camera.



## AN ESTIMATE OF UAE SPIDER NUMBERS

The results of the UAE Insect Project have emphasised that the arthropod biodiversity of the UAE exceeds estimates based on superficial reference to its small size and generally arid climate, and reflects the country's distinctive biogeographical position, as highlighted in the text. We estimate that the total number of spider species present in the UAE is in the range of 300-500. The discussion that follows is a rough statistical exercise in support of that estimate.

Our own field investigations, focused but not systematic, have distinguished *ca.* 120 spider species, although not all of those have been identified or treated in the present catalogue. As indicated above, however, all of our collecting has been by hand and we have largely ignored the least conspicuous species. Our photographs and collections include nearly 70% of the number of Salticidae (34) and Lycosidae (17) recorded by the more comprehensive efforts referenced in the introduction (see "Spider Studies in the UAE"). On the other hand, we have recognised only four Philodromidae and no Linyphiidae or Zodariidae at all, in comparison to a total of 21 published records of species in those three families based on more systematic collection under the auspices of the UAE Insect Project.

The foregoing five families can be taken to approximate a representative sample, in the sense that Salticidae and Lycosidae are relatively conspicuous, Linyphiidae and Zodariidae are very inconspicuous, and Philodromidae are more or less in-between. Within those five families as whole, we have recognised nearly 55% of the number of

species published on the basis of more comprehensive collection (~39 of 72 species). If that ratio is extrapolated and applied to the aggregate of the *ca.* 120 species we have encountered, then more systematic collection in the UAE across all spider families should be expected to yield not less than about 220 spider species.

The principal unknown variable is, then: How efficacious are the standard collecting methods used? For the UAE Insect Project, collecting methods relevant to spiders included light traps, hand collecting by light, malaise traps, pitfall traps, sweep netting, beating, and extraction from soil and litter, as well as ordinary hand collection (van Harten 2008). If those methods can be relied on to capture about 50% of the total UAE spider fauna, then the total is likely to be some 450 species, a number approximately 75% of that of the United Kingdom (generally reckoned to be about 600 species). If systematic collection is believed to capture as much as two-thirds or three-quarters of the total spider fauna, then the UAE estimate would be closer to 300 to 330 species.

Logunov (2011) has opined that the 10 species of Philodromidae so far collected from the UAE represent only one-third of what he considers a conservative estimate of the philodromid total for the Arabian Peninsula as a whole. If the UAE can be reckoned to feature half to two-thirds of all Arabian Philodromidae, then it can be inferred that collection to date has been no more than about half to two-thirds complete, making estimates of the total spider fauna towards the middle or higher end of our range more likely.

Our own records include more than two dozen spiders that have been omitted from the catalogue for various reasons, mostly because we did not have suitable photographs, we could not make reasonable identifications, and/or we could not make any useful comments about habitat, habits, distribution, ecology or the like. As noted above, we have collected specimens of approximately two-thirds of all the spider species that we have encountered, and those are available for specialist study.

In preparing the catalogue, we have not attempted to compile a comprehensive list of all spiders recorded from the UAE. Such an effort would require perusal of

an unknown amount of arcane professional literature. We believe that the number of published records from before 2010 is very small, but recent studies (e.g., Moradmand 2013) indicate that unpublished records may reside in a number of museums or other research institutions worldwide. Nevertheless, the catalogue index for eight families (Linyphiidae, Oonopidae, Oxyopidae, Philodromidae, Salticidae, Theridiidae, Thomisidae and Zodariidae) includes a supplementary list of UAE records published in recent references attributable to the UAE Insect Project and/or in H.G.B. Roberts (online). That adds an additional 53 determined species.

## USING THE INTRODUCTORY CATALOGUE

The authors hope that the account given here will be enlightening and that it will encourage further attention to UAE spiders, including both amateur observation and professional study.

Within each of the two major infraorders (the primitive spiders or mygalomorphs and the "true" spiders or araneomorphs), the spiders introduced below are listed and discussed in alphabetical order by family, genus and species, as shown in the index. The principal catalogue entries are marked with a bullet (•). A small number of species are mentioned and depicted only in the course of discussion, without treatment under an independent heading. Those species are denoted in the index by a plus sign ("+"). Additional species for which published UAE records exist, but which are not treated in the catalogue, are indexed separately after each family, showing the source of the record.

Because much of the information presented here about spiders generally, and about individual spider groups, can be found in a number of both popular and specialist reference works, no citations have been given for such information, but the references consulted for this paper have been listed in the "References" section below. Where global or regional distribution ranges have been mentioned, these have generally been taken from or checked against World Spider Catalog 2015.





## INTRODUCTORY CATALOGUE OF UAE SPIDERS (ORDER ARANEAE) Index

<u>Scientific Name</u>	<u>Common Name*</u>
Infraorder MYGALOMORPHAE	<u>MYGALOMORPHS</u>
<u>Family Theraphosidae</u>	<u>Tarantulas</u>
• <b><i>Ischnocolus</i> sp. A</b>	<i>Hajar Mountain Tarantula</i>
• <b><i>Ischnocolus</i> sp. B</b>	<i>Brown Hajar Mountain Tarantula</i>
• <b><i>Ischnocolus</i> sp. C</b>	<i>Wadi Sha'am Tarantula</i>
Infraorder ARANEOMORPHAE	<u>ARANEOMORPHS OR TRUE SPIDERS</u>
<u>Family Agelenidae</u>	<u>Funnel Weavers / Sheet Weavers</u>
• <b>cf. <i>Benoitia lepida</i></b> (O. P.-Cambridge, 1876)	<i>Stony Desert Funnel Weaver</i>
<u>Family Araneidae</u>	<u>Orb-Web Spiders</u>
• <b><i>Araneus</i> cf. <i>angulatus</i></b> Clerck, 1757	Angular Orb-Weaver
• <b><i>Argiope</i> cf. <i>sector</i></b> (Forskål, 1775)	<i>MENA Lobed Argiope</i>
• <b><i>Argiope</i> cf. <i>versicolor</i></b> (Doleschall, 1859)	Multi-Coloured <i>Argiope</i>
• <b><i>Argiope</i> sp. A</b>	<i>Lesser Lobed Argiope</i>
• <b><i>Cyrtophora</i> cf. <i>citricola</i></b> (Forsskål, 1775)	Six-Humped Dome Weaver
• <b><i>Larinia</i> cf. <i>acuticauda</i></b> Simon, 1906	<i>Hook-Tipped Grass Orb-Weaver</i>
• <b><i>Larinia</i> cf. <i>chloris</i></b> (Audouin, 1826)	<i>Reed Grass Orb-Weaver</i>
• <b><i>Neoscona</i> cf. <i>sodom</i></b> Levy, 1997	<i>Dead Sea Orb-Weaver</i>
• <b>Araneidae gen. sp. A</b>	<i>Orange Garden Orb-Weaver</i>
• <b>Araneidae gen. sp. B</b>	<i>Giant Garden Orb-Weaver</i>
• <b>Other Araneidae spp.</b>	Orb-Web Spiders (see Figs. 15.1 to 15.3)
<u>Family Dictynidae</u>	<u>Mesh-Web Spiders</u>
• <b>Dictynidae gen. sp. A</b>	<i>Leaf Lace-Weaver</i>
<u>Family Eresidae</u>	<u>Velvet Spiders</u>
• <b><i>Stegodyphus</i> cf. <i>lineatus</i></b> (Latreille, 1817)	<i>Black-Backed Velvet Spider</i>
• <b><i>Stegodyphus</i> cf. <i>nathistmus</i></b> Kraus & Kraus, 1989	<i>Veiled Velvet Spider</i>
<u>Family Eutichuridae</u>	<u>Yellow Sac Spiders</u>
• <b><i>Cheiracanthium</i> sp. A</b>	Yellow Sac Spider
<u>Family Filistatidae</u>	<u>Crevice Weavers or Hole Spiders</u>
• <b><i>Filistata</i> cf. <i>insidiatrix</i></b> (Forskål, 1775)	Common Crevice Weaver
• <b><i>Sahastata</i> cf. <i>nigra</i></b> (Simon, 1897)	<i>Hajar Mountain Crevice Weaver</i>
<u>Family Gnaphosidae</u>	<u>Ground Spiders</u>
• <b><i>Drassodes?</i> sp. A</b>	<i>Jack-in-the-Box Spider</i>
• <b><i>Pterotricha</i> sp(p).</b>	<i>Sand Tube Spider</i>
• <b>Gnaphosidae gen. sp. A</b>	<i>Wadi Hiluw Black Ant Mimic</i>
• <b>Other Gnaphosidae spp.</b>	Gravel Runners (see Figs. 26.1 to 26.3)
<u>Family Hersiliidae</u>	<u>Two-Tailed Spiders</u>
• <b><i>Hersiliola</i> cf. <i>macullulata</i></b> (Dufour, 1831)	<i>Small-Spotted Wanderer</i>
<u>Family Linyphiidae</u>	<u>Dwarf or Hammock-Web Spiders</u>
[No records by the authors ]	
Additional published UAE records:	
<b><i>Erigone autumnalis</i></b> Emerton, 1882	(see Tanasevitch 2010)
<b><i>Erigone prominens</i></b> Bösenberg & Strand, 1906	(see Tanasevitch 2010)
<b><i>Mermessus fradeorum</i></b> (Berland, 1932)	(see Tanasevitch 2010)
<b><i>Agyneta fuscipalpa</i></b> (C.L. Koch, 1836)	(see Tanasevitch 2010)
<b><i>Agyneta paraprosecta</i></b> Tanasevitch, 2010	(see Tanasevitch 2010)
<b><i>Mughiphantes edentulus</i></b> Tanasevitch, 2010	(see Tanasevitch 2010)
<b><i>Nesioneta arabica</i></b> Tanasevitch, 2010	(see Tanasevitch 2010)



**Scientific Name**

## Family Lycosidae

- *Evippa arenaria* (Audouin, 1826)
- *Hippasa cf. agelenoides* (Simon, 1884)
- *Hogna radiata* (Latreille, 1817)
- *Pardosa sp. A*
- + *Pardosa sp. B*
- *Wadicosa fidelis* (O. P.-Cambridge, 1872)
- *Evippinae gen. sp. A*
- *Evippinae gen. sp. B*
- *Lycosidae gen. sp. A*

## Family Oecobiidae

- *Oecobius cf. navus* Blackwall, 1859

## Family Oonopidae

[No records by the authors]

Additional UAE records:

- Orchestina flagella* Saaristo & van Harten, 2006

## Family Oxyopidae

- *Oxyopes cf. badhyzicus* Mikhailov & Fet, 1986
- *Oxyopes cf. lineatus* (Latreille, 1806)
- *Oxyopes sp. A*
- *Peucezia cf. viridana* Stoliczka, 1869

Additional published UAE records:

- Oxyopes sobrinus* (O. P.-Cambridge, 1872)

## Family Palpimanidae

- + *Palpimanidae gen. sp. A*
- *Palpimanidae gen. sp. B*

## Family Philodromidae

- *Philodromus sp. A*
- *Thanatus sp. A*
- *Tibellus sp. A*

Additional published UAE records:

- Halodromus barbarae* Muster, 2009
- Halodromus patellidens* (Levy, 1977)
- Halodromus vanharteni* Logunov, 2011
- Philodromus hierosolymitanus* Levy, 1977
- Philodromus latrophagus* Levy, 1999
- Thanatus fabricii* (Audouin, 1826)
- Thanatus fornicatus* Simon, 1897
- Thanatus lesserti* (Roewer, 1951)
- Thanatus sepiacolor* Levy, 1999
- Thanatus setigerus* (O. Pickard-Cambridge, 1872)

## Family Pholcidae

- *Artema cf. atlanta* Walckenaer, 1837
- *cf. Crossopriza lyoni* (Blackwall, 1867)
- *Micropholcus cf. fauroti* (Simon, 1887)
- *cf. Physocyclus globosus* (Taczanowski, 1874)

## Family Pisauridae

- *Dolomedes sp. A*
- + *Dolomedes sp. B*

**Common Name\***

## Wolf Spiders

*Sand Wolf*  
 Funnel Web Wolf Spider  
 False Tarantula Wolf Spider  
 Hajar Wadi Pardosa  
 Musandam Pardosa  
*Grecian Urn Spider*  
*Zipperback Wolf Spider*  
*Zipperback Wolf Spider*  
*Umm az-Zamool Wolf Spider*

## Star Web or Disc Web Spiders

Star Web Spider

## Goblin Spiders

(A. van Harten, *pers. comm.*, per Y. Kranz)

## Lynx Spiders

*Ivory Lynx Spider*  
 Striped Lynx Spider  
*Mottled Lynx Spider*  
 Asian Green Lynx Spider

(see H.G.B. Roberts, online)

## Palp-Footed Spiders

*Blue Palpimanid*  
*Masafi Palpimanid*

## Running Crab Spiders

Running Crab Spider  
 Running Crab Spider  
 Grass Running Spider

(see Logunov 2011)

## Daddy Long-Legs

Giant Daddy Long-Legs  
 Tailed Daddy Long-Legs  
 Leaf-Dwelling Micro-pholcid  
 Round-Bodied Daddy Long-Legs

## Nursery Web, Raft or Fishing Spiders

*Hajar Mountain Fishing Spider*



**Scientific Name****Common Name\***Family Tetragnathidae

- ***Tetragnatha cf. extensa*** (Linnaeus, 1758)

Long-Jawed or Water Orb-Weavers

Common Long-Jawed Orb-Weaver

Family Theridiidae

- ***Argyrodes sp. A***
- ***Latrodectus cf. cinctus*** Blackwall, 1865
- ***Latrodectus dahli*** Levi, 1959
- + ***Latrodectus geometricus*** Koch, 1841
- ***Steatoda cf. maura*** (Simon, 1909)
- ***Steatoda cf. triangulosa*** (Walckenaer, 1802)
- + ***Theridion jordanense*** Levy & Amitai, 1982
- **Theridiidae gen. sp. A**

Cobweb Weavers

Silver Spider  
*MENA Redback*  
 Dahl's Widow  
 Brown Widow  
*Oriental Noble False Widow*  
 Triangulate Cobweb Spider  
*Jordan False Widow*  
*Two-Striped Theridiid*

Additional published UAE records:

- ***Steatoda cf. xerophila*** Levy & Amitai, 1982

(see H.G.B. Roberts, online)

Family Thomisidae

- ***Thomisus cf. spectabilis*** Doleschall, 1859
- ***Thomisus cf. onustus*** Walckenaer, 1805
- ***Tmarus sp. A***
- ***Xysticus sp. A***
- ***Xysticus sp. B***
- **Thomisidae gen. sp. A**

Crab Spiders

Spectacular Flower Crab  
*Common Two-Humped Flower Crab*  
 Tree Thorn Mimic  
*Ground-Dwelling Crab Spider*  
*Bark-Dwelling Crab Spider*  
*Pumpkin Crab spider*

Additional published UAE records:

- ***Thomisus yemensis?*** Dippenaar-Schoeman & van Harten, 2007

(see H.G.B. Roberts, online)

Family Uloboridae

- ***Uloborus cf. plumipes*** Lucas, 1846

Hackled Orb or Triangle Web Spiders

Feather-legged Spider

Family Zodariidae

[No records by the authors ]

Additional published UAE records:

- ***Dusmadiores deserticola*** Jocqué, 2011
- ***Trygetus rectus*** Jocqué, 2011
- ***Zodarion simplex*** Jocqué, 2011
- ***Parazodarion raddei*** (Simon, 1889)

Ant-Eating Spiders

(see Jocqué 2011)  
 (see Jocqué 2011)  
 (see Jocqué 2011)  
 (see Jocqué 2011)

[\*Note: Many of the vernacular or common names for the species listed above are taken from one or the other of two well-known popular English language references, Levi & Levi (1990) and Hillyard (2006), or from Wikipedia. For species for which no suitable common name was found, the authors have proposed common names (shown in *italics*) based on the scientific names, on geographical distribution and/or on field characteristics as observed in the UAE. Common names for families have generally been adopted from the above-mentioned references and/or from Jocqué & Dippenaar-Schoeman (2007).

Although the use of common names may seem to make the recognition and identification of spiders initially more accessible (and they are included here for that purpose), the reader is cautioned that "common" names are not necessarily in common use, and may differ from place to place and from author to author. Moreover, they may sometimes be contradictory. For example, Hillyard (2006) calls the widespread cobweb spider *Steatoda grossa* (family Theridiidae) the "Cellar Spider", but "Cellar Spider" is also used by both Hillyard (2006) and Levi & Levi (1990) to refer generally to several species of Pholcidae (Daddy Long-Legs). Those two guides use the same name, "Short-Bodied Cellar Spider", for two *different* species of Daddy Long-Legs.

In order to avoid confusion of this sort, the authors have relied on and strongly recommend the use of scientific names to the extent possible. That recommendation must inevitably accommodate, however, the often formidable difficulty of determining what is the correct scientific nomenclature for any given spider taxon. Thus in practical discussion of a poorly known spider fauna it is often necessary to employ a mix of scientific and descriptive terminology.]





Fig. 1.1 A male *Ischnocolus* sp. A, probably a penultimate moult, seen here perched high on the interior wall of a Portacabin. (GRF)



Fig. 1.2. An *Ischnocolus* sp. A waits by night in ambush in the mouth of its burrow. (GRF)

### Individual species accounts

The accounts below are intended to give an indication of the typical habitats and behaviour of the spiders discussed here, which may aid in locating and identifying them.

### THERAPHOSIDAE

Members of the family Theraphosidae are mygalomorph spiders commonly called tarantulas. The family is a very large one, consisting of some 130 genera and 979 species (World Spider Catalog 2015), but they are not well-represented in Arabia. *Monocentropus balfouri* and *M. longimanus*, from the subfamily Eumenophorinae, have been recorded from Socotra Island and mainland Yemen, respectively. Otherwise, only a single subfamily (the Ischnocolinae) is known from Arabia, and all specimens from Eastern Arabia that have received expert study have been found to belong to the genus *Ischnocolus* (R.C. West, *pers. comm.*). At least two Theraphosid species appear to exist in the UAE, one of which has been found to be widespread in mountain areas, but their presence was not generally known until very recently.

***Ischnocolus* sp. A.** This species (Fig. 1.1) was first recognised by Priscilla van Anandel in early 2013 (van Anandel 2014) and has been determined as new to science by West *et al.* (*in prep.*). It is a large spider by UAE standards, having a body length in excess of 20 mm, and is somewhat variable in colour, from black to grey to blue, depending on maturity and moulting status, as well as lighting conditions (see van Anandel 2014, West *et al. in prep.*, and Figs. 1.1 and 1.2).

van Anandel found *Ischnocolus* sp. A at a number of Hajar Mountain sites, particularly under stones on gentle wadi banks and low wadi terraces. In the course of field investigations since mid-2014, we have



Fig. 1.3. A burrow of *Ischnocolus* sp. A with multiple entrances, in a soft layer in a wadi bank within the altered ophiolite bedrock of the Hajar Mountains. (GRF)



Fig. 1.4. Spider hunting in the UAE: BR poses in Wadi Wurayah National Park with a burrow of *Ischnocolus* sp. A in an atypical environment – the bed of a broad gravel wadi. The circular burrow mouth is clearly visible under the large rock in the centre foreground. (GRF)



likewise found it to be present and sometimes locally common at many locations throughout the Hajar Mountains of the UAE, including the outlying ridge of Jebel Fayah. By night, the spider perches in the mouth of its burrow, waiting patiently for prey to pass within reach of ambush (Fig. 1.2).

We also learned that burrows are generally conspicuous (at least to the initiated) and can be scouted by day. The silken lining is usually visible and there may sometimes be additional adjacent entrances. The burrows we have found were occasionally located under stones but were more often constructed in fractures or other zones of weakness near the base of wadi banks, especially in consolidated or lightly cemented gravel or chemically altered veins or seams in ophiolite bedrock (Figs. 1.2, 1.3, 1.4). To our initial surprise, we also frequently found burrows near the base of berms of bulldozed material along roadsides, dumps and cleared plains or terraces, and we quickly learned to investigate such terrain as a priority.

During November and December 2014 and January 2015 we revisited several known *Ischnocolus* sp. A localities by day and night, even as we continued to search for additional new ones. We were able to identify most earlier burrow sites but we saw only a few spiders, and many burrows appeared to be disused, with the silken tunnels absent or in disrepair. It may be that *Ischnocolus* sp. A is less active during winter, and that some individuals may 'hibernate'. However, many of the sites we visited had

experienced exceptionally heavy rain in early November, and this, in our opinion, more than low temperatures, may account for the disruption of many wadi bank and other populations. As of May 2015, *Ischnocolus* numbers in the worst affected areas had not fully recovered, although we had by that time encountered numerous sites elsewhere.

A much earlier, unpublished observation from ca. 800 metres elevation on Jebel Wamm, Fujairah, in the southern Ru'us al-Jibal range (the mountains of the Musandam Peninsula) could possibly have been *Ischnocolus* sp. A. A black tarantula perched in the mouth of its burrow under a large rock showed distinct, bright blue highlights on its tarsi (Feulner, *pers. obs.*), like what is seen in some freshly moulted specimens of *Ischnocolus* sp. A. Alternatively, higher elevations could be populated allopatrically by a different *Ischnocolus* species, a biogeographic pattern known elsewhere (S. Nunn, *pers. comm.*).

***Ischnocolus* sp. B.** A small number of individuals of this tarantula (Figs. 2.1 to 2.4) have been observed over a year's time at a single locality in a tributary of Wadi Asfani (a/k/a Isfuni, Sifuni, etc.) where *Ischnocolus* sp. A is also present. Since it is unusual for multiple *Ischnocolus* spp. to be found sympatrically (S. Nunn, *pers. comm.*), the possible co-existence of two different species is of special interest. Specimens of *Ischnocolus* sp. B were collected for expert comparison but did not survive international transportation in a



Fig. 2.1. *Ischnocolus* sp. B, perched outside the mouth of its burrow in firm gravel substrate within a bulldozed berm. (BR)



Fig. 2.2. *Ischnocolus* sp. B: A second individual from the same locality as Fig. 2.1, showing variation in colour and other features such as hairiness. (BR)





Fig. 2.3. *Ischnocolus* sp. B: A specimen photographed in daylight, alive but in vitro. (GRF)

condition suitable for taxonomic analysis. Additional collection efforts will be made, but should be emphasised that, at this stage, the inclusion of *Ischnocolus* sp. B as an independent entry in this catalogue is based solely on the authors' field judgment, not on specialist input.

*Ischnocolus* sp. B is similar in size and shape to *Ischnocolus* sp. A, with a body length of nearly 20 mm, but it differs from *Ischnocolus* sp. A, which was present only a few metres away, in several field characters including both appearance and behaviour: (i) It is brown to reddish-brown in colour, not black or blue or even grey; (ii) Its burrows were found only in a relatively hard substrate – a particular facies of a long, bulldozed gravel berm, the product of adjacent road construction, with *Ischnocolus* sp. A occupying burrows in softer facies; (iii) The burrow of *Ischnocolus* sp. B is an inconspicuous crack, without an obvious silk lining; and (iv) *Ischnocolus* sp. B regularly perches just outside the burrow entrance, not merely in it. All of these phenomena could conceivably be secondary effects of the substrate. Some Theraphosid species show high degrees of polymorphism based not only on geographic distribution but sometimes also on factors such as diet (R.C. West, *pers. comm.*). In the end, only expert analysis can determine whether *Ischnocolus* sp. B is in fact an independent species or only a highly localised variant of of *Ischnocolus* sp. A.



Fig. 2.4 *Ischnocolus* sp. B: A preserved specimen suspected to be a mature female. (BR)



The accompanying photographs (Figs. 2.1 to 2.4) indicate the variability that exists even within what we have treated as *Ischnocolus* sp. B. One of the individuals photographed in life appears brown and very hairy overall (Fig. 2.2); the other appears red-brown with much less hairy forelegs (Fig. 2.1). Also shown are a live specimen photographed *in vitro* (Fig. 2.3) and a fourth individual, a preserved specimen suspected to be a mature female (R.C West, *pers. comm.*) (Fig. 2.4).

***Ischnocolus* sp. C.** The mygalomorph spider shown in Fig. 3.1 was photographed in late afternoon in December 2004 beside a rough trail on the rocky slopes above Wadi Sha'am, in northernmost Ra's al-Khaimah, at an elevation of about 500 metres. At that date we were not aware of any specialists interested in the spider fauna of the UAE, so the spider was not collected, but a short note was drafted.

The photos were shown to experts Rick West and Steve Nunn in 2014 in connection with their review of the theraphosid subfamily Ischnocolinae in Arabia (West *et al.*, *in prep.*). They agreed that the spider shown in Fig. 3.1 appears to belong to the Ischnocolinae and, if so, then consistent with their regional findings to date it is most likely to belong to the genus *Ischnocolus* (R. West, *pers. comm.*). Its morphology and colouration, however, appear sufficiently distinctive to justify its treatment here as an entry separate from *Ischnocolus* spp. A and B.



Fig. 3.1. *Ischnocolus* sp. C: This spider, a mygalomorph tarantula (Family Theraphosidae) was photographed wandering beside a rocky mountain trail in northernmost Ra's al-Khaimah. Photographic images do not permit definitive identification, but it is considered most likely to belong to the genus *Ischnocolus*. (GRF)

## AGELENIDAE

**cf. *Benoitia lepida*.** Members of the family Agelenidae are commonly called araneomorph funnel web spiders.\* They make sheet webs in various environments that have a funnel shaped passage leading to the spider's retreat.

Most of the funnel webs we have observed in UAE environments have proved to belong to a specialised wolf spider of the genus *Hippasa* (Family Lycosidae), discussed below. Two webs, however, found among rocks on the slopes of Wadi Asfani, were the handiwork of an agelenid species. In each case the webs were sheltered by rocks on three sides and in each case they featured a broad, distal apron that was separated from the spider's smaller retreat by a narrow tunnel, like the neck of an hourglass (Fig. 4.1).

The resident spider itself is small and relatively spiny (Fig. 4.2). The eye pattern and the long spinnerets (Fig. 4.3), in addition to the funnel web, confirm it as an agelenid. We later found what appears to be a melanistic version of the same spider (Fig. 4.4), on the slopes of a wadi along the mountain front south of the Hatta road, near Jebel Rawdhah.

In attempting to identify these spiders, the regionally widespread agelenid *Benoitia lepida* was an obvious candidate for priority consideration. It is known from stony desert environments (Levy 1996) in North Africa, Saudi Arabia, Yemen and Iran. The only published photo we could find of *B. lepida* is that of a specimen collected by Desouky & El-Hennawy (2012, at Fig. 2), which appears to be a good match in terms of the overall pattern of design elements, although not of their expression, which is different in each of the three instances.

It bolsters the case for *B. lepida* that, in the vicinity of our second record, we found apparently unoccupied funnel webs in association with hanging egg capsules (Fig. 4.5) of the sort described for *B. lepida* (Levy 1996). We attempted to revisit the area, which is just over the UAE's border with Oman, but evolving border constraints and restrictions on selected nationalities prevented our planned joint return.

[\*The Agelenidae are a family of generally harmless spiders and should not be conflated with the so-called funnel web mygalomorphs (family Hexithelidae), which include two well-known and dangerous spiders bearing the "funnel web" name: the Sydney funnel web spider *Atrax robustus* and the Spanish funnel web spider *Macrothele calpeiana*. Those spiders are unrelated to Agelenidae.]



Fig. 4.1 A funnel web constructed by cf. *Benoitia lepida*, sheltered among medium-sized stones along Wadi Asfani. (GRF)



Fig. 4.2 Cf. *Benoitia lepida* in its web along Wadi Asfani. (BR)



Fig. 4.3 A close-up dorsal view of the spider shown in Fig. 4.2, showing the pattern of the eyes and the long spinnerets. Compare with the wolf spider *Hippasa* cf. *agelenoides* (Figs. 27.1 and 27.2), which constructs a similar web. (BR)



Fig. 4.4 A second, melanistic (darker-hued) cf. *Benoitia lepida* in its web along the mountain front west of Hatta. (BR)



Fig. 4.5 A dusty funnel web in the vicinity of the spider shown in Fig. 4.4, associated with hanging egg capsules of the sort described for *Benoitia lepida*. (GRF)





## ARANEIDAE

The family Araneidae is the largest family of orb-web spiders and is the third largest family of spiders overall, with more than 3,000 species currently recognised. They range in size from large and often very colourful spiders, like many of those in the genus *Argiope*, to much smaller and less conspicuous species. Araneids typically exhibit sexual dimorphism, sometimes to an extreme degree, with males being much smaller and less conspicuous than females. Many species also exhibit considerable variation in both colour and patterning, especially of the dorsal surface, making field identification a perilous exercise. Even generic determinations can be very difficult using only macroscopic features, e.g., discrimination among the common and very large genera *Aculepeira*, *Araneus* and *Neoscona*. Perhaps in consequence of these challenges, the UAE Insect Project has experienced difficulty in recruiting specialists able or willing to examine the Araneidae material that has been collected to date from the UAE (A. van Harten, *pers. comm.*).

***Araneus cf. angulatus*.** This orb-weaving spider has proved to be both common and widespread in the UAE, although our indicative identification remains to be confirmed. It is characterised by (i) a pale, hairy carapace, (ii) two prominent tubercles on the “shoulders” of the abdomen; (iii) dark colour bands along the ridge of each “shoulder”; (vi) a dark central “badge” at the front of the abdomen, between the “shoulders”; (v) a broad, serrated “V” marking on the abdomen posterior to the tubercles; (vi) dark colouration on the dorsal femurs (upper legs); (vii) robust, erect, white bristles on the legs, especially legs I and II; and (viii) a fringe of bristly white hairs at the lower margin of the anterior abdomen. These features are all well developed in the specimen shown in *Figs. 5.1* and *5.2*.

In the UAE, we have recorded females of this species by night in diverse natural environments: at Mushrif Park, Dubai, in a large shrub of *Calligonum comosum* on sand substrate; in large *Leptadenia pyrotechnica* shrubs at the Dubai Desert Conservation Reserve; and in trees in mountain wadi environments at Wadi Asfani, Wadi Hiluw and Wadi Wurayah National Park headquarters. An older photograph in GRF’s files appears to show a melanistic version of this same spider, reminiscent of several online images from locations in Northern Europe.

In attempting to propose an indicative identification to facilitate general recognition and discussion of this spider, we have relied principally on the photograph and description of *Araneus angulatus* in Hillyard (2006), which is very similar in most of the features mentioned above. *A. angulatus* has a widespread Eurasian distribution but is more common in southerly regions than in the north. Consistent with what is written of *A. angulatus* in Europe (Loven, online), the local species, which we have designated as *A. cf. angulatus*, does not build a retreat. Instead, if threatened in its web, it retreats to the branches that support it.

It bears repeating, however, that our indicative identification is intended as a convenience and should not be taken as definitive. *Araneus* is a extremely large genus, containing ca. 650 species, and while the physical features enumerated above are all characteristic of *A. angulatus*, no individual feature is specific to *A. angulatus* alone, and several of those features can be found not only in related species but in related genera. Compare, for example, the discussion below of the more colourful but otherwise rather similar Araneidae gen. sp. A (*Figs. 13.1, 13.2*), as to which we are unable to resolve even the choice among genera.



Fig. 5.1 An *Araneus angulatus* female in upper Wadi Hiluw, showing characteristic markings. (BR)



Fig. 5.2 A dorsal view of the same spider in motion, showing the dark colouration of the dorsal femurs (upper legs).





From our experience, it seems likely that *Araneus* cf. *angulatus* and other similar, smaller araneids, are more widespread than has been appreciated, and have been overlooked or ignored, consciously or unconsciously, due to their small size, the difficulty of photographing them, and the general difficulty of identifying *Araneus* and related species.

***Argiope* cf. *sector*.** This large and attractive *Argiope* spider (Figs. 6.1, 6.2) was common and widespread in the wet years of the late 1980s through the late 1990s. It has been found from the sands of the Liwa crescent to the gravel plains and mountain wadis of the Northern Emirates.

The female builds a classic orb-web which is normally ca. 30-60 centimetres in diameter (Fig. 6.3). In exceptional cases, the supporting framework can span two metres. The web may be constructed between trees, among rocks or shrubs, or on fences. The spider positions herself at the centre of the completed web, on the underside of the slightly sub-vertical structure, facing downwards.

Built into the web, near its centre, are up to four radially-oriented jagged white lines, like lightning bolts, made of more densely woven silk,

called stabilimenta (singular: stabilimentum) (Fig. 6.3). The purpose of the stabilimenta remains unresolved, as far as we know. The original explanation of giving structural support to the web seems unlikely. An alternative hypothesis is that the stabilimenta call attention to the web in order to prevent inadvertent collisions and destruction by birds and other animals too large to become entrapped. A more recent suggestion is that the stabilimenta mimic the ultra-violet light reflecting markings that are now known to exist on many flower petals, directing pollinating insects to their target of nectar – in this case a deceptive and treacherous guide.

As in a number of other orb-web species, if the female senses danger of attack, she can rapidly vibrate the web, perpendicular to its plane, blurring her image and making her a more elusive target.

The much smaller male spider can often be found on the web (6.4), usually near the periphery. On at least one occasion, two males were present on the same web.

The egg case of this spider resembles a rounded thimble in size and shape, with a flat silk cover. The egg case is suspended in mid-air by silken threads, at a location separate from the web (Fig. 6.5).



Fig. 6.1 *Argiope* cf. *sector*: Dorsal view of a female in Wadi Zikt, showing the characteristic pale, creamy white colouration. (GRF)





Fig. 6.2 *Argiope* cf. *sector*: Ventral view of the spider depicted in Fig. 6.1, showing the distinctive “Mickey Mouse” or “Teddy Bear” face just below (anterior to) the centre of the abdomen. (GRF)



Fig. 6.3 A profile view of an *Argiope* cf. *sector*, showing the strongly domed carapace of the adult female. The white streaks at the left are stabilimenta. (GRF)



Fig. 6.5 A pair of *Argiope* cf. *sector* in a web: the underside of a large female and dorsal view of the much smaller male. (GRF)



Fig. 6.5 The egg capsule of *Argiope* cf. *sector*, suspended in a dense *Euphorbia larica*. The capsules may be suspended in shrubs, in fences or under rocks. (BR)



To the best of our knowledge there has been no expert determination of any specimens of this *Argiope* species from the UAE. More than two dozen photos of large female spiders taken over the years show a pale but somewhat variably marked dorsal abdomen, which appears to develop allometrically and is relatively broader in larger specimens. The underside markings, however, are highly consistent among most of our photographs of females from various dates and places. In particular, they show a similar and distinctive ventral abdominal pattern featuring a central silhouette resembling a “Mickey Mouse” or “Teddy Bear” head (Fig. 6.2). The colouration of the legs and joints is also similar among these photographs.

Several UAE authors have pointed out the resemblance of this spider to *Argiope lobata*, a species found in much of Africa, Southern Europe and adjacent Asia, including Syria, Israel and Iran (Jäger 2012), and it would not be unreasonable to encounter *A. lobata* in the UAE. However, a more convincing candidate is *Argiope sector*, a species closely related to *A. lobata* (Bjørn 1997) but having its distribution centred in North Africa and the Near East, including Saudi Arabia (Jäger 2012) and Iran (Zamani *et al.* 2015), where it was recorded in southern Iran at a location near the Arabian Gulf (A. Zamani, *pers. comm.*). The most recent study which compares these two species and illustrates macroscopic features of each depicts a ventral abdominal pattern for *A. sector* which corresponds well with the UAE species, whereas the ventral pattern shown for *A. lobata* is very different (Bjørn 1997, see Figs. 54 to 62).

***Argiope cf. versicolor.*** This spider is one of a number of *Argiope* species that feature bold yellow, black and white markings. It was initially proposed for inclusion here on the basis of a photograph taken in the spring of 2004 by long-time Fujairah resident Minie van de Weg, in a tomato patch in the garden of Fujairah’s erstwhile maternity clinic (Fig. 7.1). Minie’s photo is a good match for *Argiope versicolor* as depicted online and in Hillyard (2006), where it is characterised as having a Southeast Asian range. Minie’s photo also shows, and her correspondence describes, the elongated, tubular, dirty-white egg cases suspended beside the web.

We initially considered it unlikely that a spider such as *A. cf. versicolor* would be found in the UAE outside cultivated environments. However, our indicative identification of Minie’s photo facilitated recognition of a probable second record from a ridge in the mountains of the southern Musandam, overlooking Khor Haffah, Oman, based on a photo of the underside taken in March 1998 (Fig. 7.2) (compare, e.g., images

at Phuket Nature Tours (online), Plant Observatory (online), and Tan (online)). It may be significant that this record in a “wild” environment followed a period of three consecutive years of unusually heavy rain in the UAE (Feulner 2006).

The colourful ventral pattern may not be as distinctive as it initially appears, however. Other online images show a very similar pattern for the underside of *Argiope* spiders identified as different species, e.g., *A. aemula* (<http://www.dipodovie.net/arachnides/Araneidae/Argiope/BestOf/Argiope%20aemula%20F.%2014.5mmM.%20Pare-Pare.%20150809a.html>) and *A. pulchella* ([http://www.wikiwand.com/en/List\\_of\\_spiders\\_of\\_India](http://www.wikiwand.com/en/List_of_spiders_of_India)). Like *A. versicolor*, both *A. aemula* and *A. pulchella* are species of India, China and Southeast Asia. Some experts have considered *A. pulchella* a synonym of *A. versicolor* (Jäger & Praxaysombath 2009).

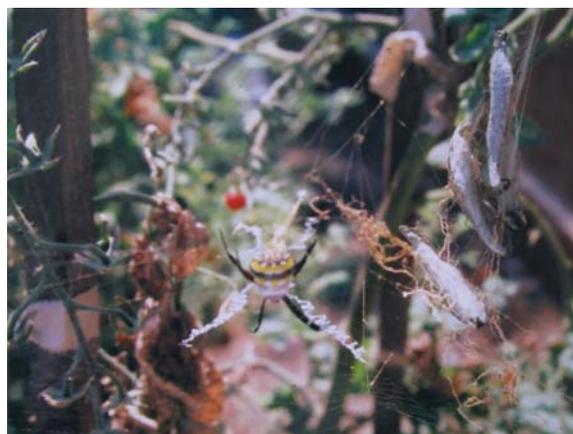


Fig. 7.1 *Argiope cf. versicolor*: a gross view taken in a Fujairah tomato patch, showing the female upperside, stabilimenta and elongated white egg cases adjacent to the web (at right). (Photo by Minie van de Weg)



Fig. 7.2 *Argiope cf. versicolor*: a view showing the distinctive underside of the female. This photo is from a natural environment, a mountain ridge in the southern Musandam peninsula. Seen at right is the mountain shrub *Lavandula subnuda*. (GRF)



Fig. 8.1 An unidentified *Argiopo* species observed in Wadi Wurayah National park, showing the distinctive ventral colour pattern seen in specimens at several locations over a number of years. (GRF)



Fig. 8.2 An *Argiopo* species observed at Wadi Qinan, showing the same ventral colour pattern seen in Fig. 8.1. (GRF)



Fig. 8.3 Dorsal view of the *Argiopo* spider shown in Fig. 8.1, showing the relatively consistent dorsal colouration seen in other specimens. (BR)

***Argiopo* sp. A.** Photos taken over a 17-year period from diverse sites – Jebel Qitab, Wadi Wurayah National Park, a tributary of Wadi Shawkah and saltbush scrub desert in coastal Ajman – all show an *Argiopo*-like spider with a narrow, slightly lobed abdomen similar in shape to that of immature *A. lobata* or *A. sector*, but with very different dorsal and (especially) ventral markings (Figs. 8.1, 8.2, 8.3). The ventral abdominal pattern is consistent and similar to that of the cosmopolitan *A. trifasciata* (Bjørn 1997, online images), although the dorsal pattern is very different from that of available images of *A. trifasciata*.

***Cyrtophora* cf. *citricola*.** This spider has been found over several years on bulrushes (*Juncus maritimus*) in the salt marshes fringing the landward edge of Khor Hulaylah, Ra's al-Khaimah, and more recently in low mangrove shrubs at both Khor Hulaylah and nearby Jazirat al-Hamra (T. Carlisle, *pers. comm.*). Its web is a semi-cylindrical or domed chamber, or sometimes a more irregular framework, with a “floor” consisting of a fine, square, silk mesh (Figs. 9.1, 9.2). At Jazirat al-Hamra, the webs were clustered colonially (Fig. 9.3). Active spiders were present in most webs in February and March, but fewer could be found in summer (early July) and none on an early September visit.

The genus *Cyrtophora* consists of more than 40 species, almost all of which construct a similar dome web, but *C. citricola* is distinguishable by the three pairs of well developed conical protuberances (tubercles) on the dorsal abdomen of the female spider, including a distal pair (Figs. 9.4, 9.5). Aggregations of individuals are known from other *Cyrtophora* species as well, but no *Cyrtophora* are known to engage in active social cooperation (Levy 1997).

As in other *Cyrtophora* spp., the web of the Khor Hulaylah and Jazirat al-Hamra spiders is decorated with clumps of material consisting of the remains of prey and other debris (Fig. 9.6).



Fig. 9.1 A semi-cylindrical “tent” or “dome” web of *Cyrtophora* cf. *citricola* in rushes (*Juncus maritimus*) in the salt marsh fringing the landward edge of Khor Hulaylah, Ra's al-Khaimah. (GRF)





Fig. 9.2 Ventral view of a female *Cyrtophora cf. citricola* at Khor Hulaylah, also showing the fine, square, silk mesh of the “floor” of the web. (GRF)



Fig. 9.3 A colony of *Cyrtophora cf. citricola* webs on the fringe of the mangrove forest at Jazirat al-Hamra, February 2015. (Photo by Tamsin Carlisle)



Fig. 9.4 The abdomen of the *Cyrtophora cf. citricola* female features three paired, conical protuberances, as shown here in a profile. (BR)



Fig. 9.5 Dorsal view of a *Cyrtophora cf. citricola* female *in vitro*, showing the three paired, conical protuberances on the abdomen. (BR)



Fig. 9.6 The web of *Cyrtophora cf. citricola* is decorated with clumps of material consisting of the remains of prey and other debris. These serve as decoys to conceal the identity of the spider perched among them. In this photo, the female spider is in the centre, with a dark spot (the spinnerets) on the underside. (GRF)





Fig. 9.7 An elongated egg capsule suspended in a web of *Cyrtophora cf. citricola* at Khor Hulaylah. (GRF)

These serve as decoys to conceal the identity of the spider perched among them. The effect is enhanced because, unlike some other web-building spiders, *Cyrtophora* spp. draw their legs close to the body when resting, disguising their eight-legged silhouette. In at least some instances the spiders may use these clumps of debris for more direct protection, sheltering under small, cone-shaped agglomerations. The Khor Hulaylah species also suspends its egg cases within the shelter of the dome web (Fig. 9.7).

The salt marsh at Khor Hulaylah, the only such habitat in the UAE, is under severe threat from land-filling for the expansion of housing for the village of Rams. Efforts to preserve substantial areas of the salt marsh, which is home to other plant and animal species rare in the UAE, have been unsuccessful. The mangrove lagoon habitat seen at Jazirat al-Hamra and elsewhere in the Northern Emirates is also under serious threat from development. It is not currently known whether *C. cf. citricola* is limited to the lagoon and salt marsh habitat or whether it can be found more widely, e.g., in the traditional oasis of Dhayah, inland of Khor Hulaylah.

*C. citricola* is widespread in the Old World and is the only *Cyrtophora* species in the circum-Mediterranean area (Levy 1997). It exhibits a range of colour variations and a number of subspecies have been designated. In South Africa, DNA and anatomical analysis of spiders that were originally considered to represent *C. citricola* have revealed at least one additional



Fig. 9.8 A tent web in a shrub on a ridge overlooking Khor Haffah in the southern Musandam. (GRF)

cryptic species (Franzini *et al.* 2013); the same result is possible elsewhere.

A similar web (Fig. 9.8) and a spider that appears to be a *Cyrtophora* (Fig. 9.9) were found in the late 1990s at 500 metres elevation in the southern Musandam, on the ridge overlooking Khor Haffah, the site of the newly-created resort village of Zaghi, where the web was constructed in a metre-high shrub. The ventral markings of the two are similar in pattern but different in colour (compare Fig. 9.9 with Fig. 9.2). No *Cyrtophora* species are yet included in *The Checklist of Spiders of Iran* (Zamani *et al.* 2015) but our observations make it likely they will be found on the Iranian shores of the Strait of Hormuz as well.



Fig. 9.9 Ventral view of the builder of the web shown in Fig. 9.8, a probable *Cyrtophora* sp. female. (GRF)



Fig. 10.1 *Larinia* cf. *acuticauda*: Dorsal view of a female in a *Leptadenia pyrotechnica* shrub at Mushrif Park, Dubai. This is one of at least two *Larinia* species believed to be present in the UAE. All are elongated, nocturnal orb-web weavers. The photo shows the very elongated, pointed abdomen and feathery forelegs. (NB: The spider shown is eating a pale moth.) (BR)



Fig. 10.2 *Larinia* cf. *acuticauda*: Dorsal view of a female among rushes in the salt marsh at Khor Hulaylah, Ra's al-Khaimah. (BR)



Fig. 10.3 *Larinia* cf. *acuticauda*: Ventral view of a female among rushes in the salt marsh at Khor Hulaylah, Ra's al-Khaimah. (BR)

***Larinia* cf. *acuticauda*.** We have found these spiders by night in two disparate environments: (1) among the vertical branches of broom trees (the large desert shrub *Leptadenia pyrotechnica*) in Mushrif Park, Dubai (Fig. 10.1); and (2) among the vertical spikes of the brackish water rush *Juncus maritimus* in the salt marsh at Khor Hulaylah, Ra's al-Khaimah (Figs. 10.2, 10.3). In the field, they bear an immediate resemblance in morphology and habits to *Larinia* cf. *chloris*, discussed below, but they are visibly larger, their

abdomens are proportionately longer and more pointed, both fore and aft, and they exhibit a dark longitudinal band ventrally, which is not as prominent in *L. cf. chloris*. Specimens of females from both sites allowed us to make a tentative identification as *L. acuticauda* because they show the diagnostic downward "hook" at the distal tip of the abdomen (Framenau & Scharff 2008) (Fig. 10.4). At Mushrif Park, their webs were invariably a well-formed orb; in the rushes at Khor Hulaylah, that was not always true.

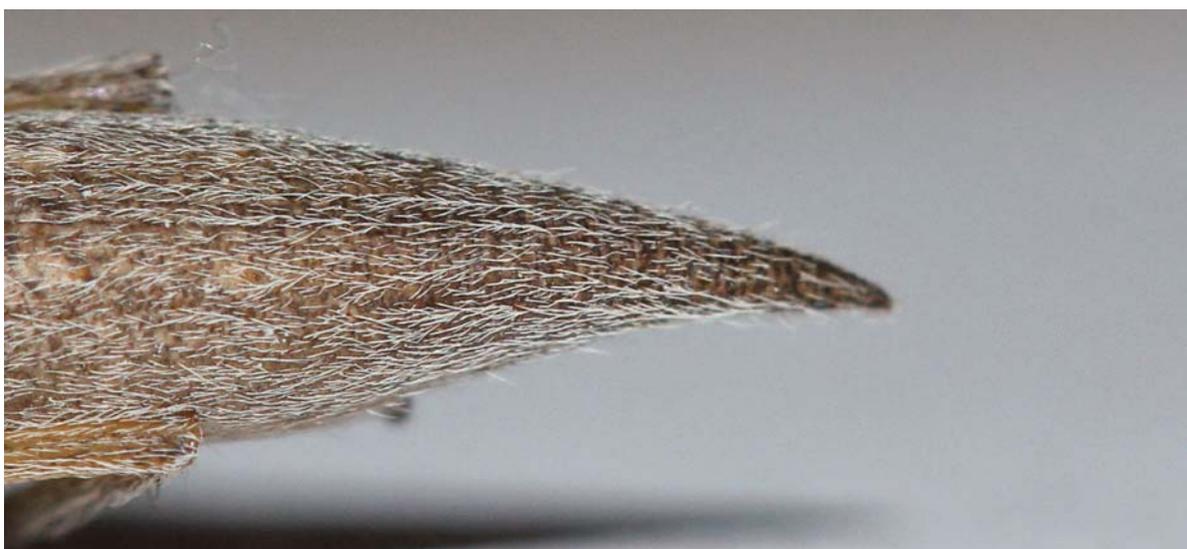


Fig. 10.4 The downcurved 'hook' at the tip of the abdomen, seen here in a specimen from Khor Hulaylah, is characteristic of *Larinia acuticauda*. (BR)





Fig. 11.1 *Larinia* cf. *chloris*: dorsal view, Ruwayah plantation, Dubai. (BR)



Fig. 11.2 *Larinia* cf. *chloris*: ventral view, Ruwayah plantation, Dubai. (BR)



Fig. 11.3 *Larinia* cf. *chloris* perched on a reed, Ruwayah plantation, Dubai. (BR)

***Larinia* cf. *chloris*.** These nondescript but industrious spiders (Figs. 11.1, 11.2, 11.3) emerge each evening at dusk to commence building a small, more or less vertical orb-web of very closely-spaced concentric rings (Fig. 11.4), which they can complete in about 15-20 minutes. By morning the webs have been consumed and removed.

These spiders were particularly abundant among the thick reeds (*Phragmites australis*) growing along shallow drainage ditches at the long-established Ruwayah agricultural plantation outside Dubai. They were also common in the extensive reedbeds (*Arundo donax*) above the permanent waterfall in Wadi Wurayah, Fujairah. We have sometimes found them away from reeds (and water), but only intermittently, in occasional shrubs in mountain wadis.

Among the distinctive field characteristics are the elongated, cylindrical abdomen and closely-spaced, forward-oriented, feathery hairs on the legs, as well as erect bristles. Dr. Helen Prokopenka kindly provided a provisional identification to genus, which allowed us to investigate possible candidate species. The leading candidate on the basis of overall appearance, colouration and range is *Larinia chloris* (Audouin, 1826), which has been recorded from Turkey to Mozambique and India. Our photos are a match for photos of *L. chloris* published by Dmitry Levin (online) from the Eastern Mediterranean, which are among only a relatively small number of spiders identified to species in Levin's collection.



Fig. 11.4 *Larinia* cf. *chloris*: Ruwayah plantation, showing the finely-spaced concentric rings of its nightly orb-web. (GRF)





Fig. 12.1 *Neoscona* cf. *sodom*: A female in its orb-web in Wadi Wurayah, Fujairah, showing the distinctive pattern of the dorsal abdomen. This individual is probably a juvenile: the legs appear translucent and have not yet developed any colour banding. (BR)

***Neoscona* cf. *sodom*.** The diurnal orb-weaver shown in Figs. 12.1 and 12.2 has been observed and photographed in two contrasting locations in the UAE over an interval of fifteen years: (i) in the main branch of Wadi Wurayah (Fig. 12.1); and (ii) among palm trees in the plantations at Khatt, Ra's al-Khaimah (Fig. 12.2). The associated web was in one case a relatively orderly, sub-vertical orb-web, but in the other a more diffuse and angled framework.

The general form of the dorsal abdominal marking, resembling an intricately patterned caduceus, is common to Araneidae in a number of genera, including *Aculepeira*, *Araneus* and *Neoscona*, all of which are present in the Middle East and all of which are difficult to distinguish. As a result we expected that identification of this spider even to genus level would be problematic. Imagine our surprise, then, when we found that the markings in our photos correspond in detail to those illustrated by Levy (1997, Fig. 118) for the female of *Neoscona sodom*, a species still formally recognised only from the Holy Land. Given the nature and location of the sites at which it has already been found in the UAE, this spider could prove to be more common than has been recognised.



Fig. 12.2 *Neoscona* cf. *sodom*: Ventral view of a female from the palm plantations at Khatt, Ra's al-Khaimah. (GRF)

**Araneidae gen. sp. A.** The autumn-hued small orb-weaver shown in Figs. 13.1 and 13.2 has been observed in landscaped and artificially maintained environments on the grounds of Emirates Towers and the Madinat Jumeirah Resort, both in Dubai, and in a plantation at Mirbah, Fujairah, on the Gulf of Oman coast. The associated webs were well formed and sub-vertical.

The overall form of this spider is similar to that of *Araneus* cf. *angulatus*, discussed above, and it shares several of the individual characters enumerated for *A. cf. angulatus*. However, the absence of the prominent tubercles on the 'shoulders' of the abdomen; the consistent colour pattern, different from the consistent colour pattern seen in our specimens of *A. cf. angulatus*; and its occurrence only in more mesic, synanthropic environments, all justify separate treatment for this spider.

Identification presents many of the same challenges as for *A. cf. angulatus*, including discrimination between the two most likely genera, *Araneus* and *Neoscona*, which in this case we have not resolved. This spider resembles, at first glance, the colourful morphs of garden spiders of the genus *Eriophora* (formerly included within *Araneus*), but closer examination suggests that the proportions may be wrong for *Eriophora*, particularly the relatively large cephalothorax. In addition, *Eriophora* is primarily a genus of the New World, Australia and the West Pacific; it has not yet been recorded from most of mainland Eurasia or from the Middle East and North Africa.



Fig. 13.1 *Araneidae* gen. sp. A: A colourful female from the landscaped grounds of Emirates Towers, Dubai.



Fig. 13.2 *Araneidae* gen. sp. A: Another female from the grounds of the Madinat Jumeirah resort, Dubai.

**Araneidae gen. sp. B.** BR encountered the large orb-weaver shown in Fig. 14.1 on the landscaped grounds of Emirates Towers, where it attracted his attention primarily because of the size of the spider (estimated 20mm total length) and its web (a robust orb of ca. 60cm diameter, set in a framework spanning a gap of more than a

metre). It is by far the largest of the *Araneus/Neoscona*-morph spiders that we have observed in the UAE. Identification poses the same problems as for *Araneidae* gen. sp. A, although the size of the spider limits potential alternatives.



Fig. 14.1 *Araneidae* gen. sp. B: A drab but very large orb-weaver from the landscaped grounds of Emirates Towers, Dubai.





Fig. 15.1 The three orb-web spiders shown here, alive but *in vitro*, were all collected in close proximity on a single night in a tributary of Wadi Asfani. They illustrate a fundamental problem of spider identification. Although all had similar habits, they appear to be different, but they lack distinctive, articulable macroscopic features. This, coupled with the general absence of reliable photographic references, frustrates efforts by non-professionals. (BR)

**Other Araneidae spp.** Fig. 15.1 shows three additional orb-web spiders, alive but *in vitro*, all collected in close proximity on a single night in a tributary of Wadi Asfani. These photos illustrate the fundamental problem that besets attempts to identify many spiders. Although all had similar habits, they appear to us to be different. But the lack of distinctive, articulable macroscopic features, coupled with the general absence of reliable photographic references, frustrates efforts by non-specialists.

Fig. 15.2 exemplifies a different problem – the one referred to above in the discussion of *Neoscona* cf. *sodom*, but without the same serendipitous outcome. This spider exhibits what appear to be distinctive markings on the dorsal

abdomen, but in fact these represent only a single variant of a more generalised pattern, resembling a leaf or caduceus, that is common in at least three large Araneid genera – *Aculepeira*, *Araneus* and *Neoscona*. Compare this spider, for example, with those shown in Figs. 12.1, 13.1 and 13.2. Attempting to find a match based on visual criteria can require judicious comparison of dozens or even hundreds of related species – assuming that a useful database of properly identified specimens exists, which is generally not the case.

Fig. 15.3 shows another araneid spider that has been found in two very different environments and circumstances in the UAE, as detailed in the figure caption.



Fig. 15.2 This orb-weaver seen by night at Khor Hulaylah has distinctive markings on the dorsal abdomen, but they represent a single variant of a very generalised pattern, resembling a caduceus, that is common in at least three large Araneid genera – *Aculepeira*, *Araneus* and *Neoscona*. (BR)



Fig. 15.3 This spider, dubbed the “Cantaloupe Weaver” for the appearance of its abdomen, was recorded in two disparate environments and circumstances: by day on wadi boulders in Wadi Wurayah National Park and (shown here) by night on the large shrub *Leptadenia pyrotechnica* beside an artificial pond within the Dubai Desert Conservation Reserve. (BR)





Fig. 16.1 Dictynidae gen. sp. A: This tiny spider lives on leaves and shelters inconspicuously under a diaphanous silken sheet. A male is shown here on *Cyperus alternifolius*. (BR)



Fig. 16.2 Dictynidae gen. sp. A: A female in its shelter on the leaf of a Bougainvillea. The spider is unlikely to be noticed unless the leaf is actively examined. (GRF)



Fig. 16.3 Dictynidae gen. sp. A: A close-up of the female shown in Fig. 16.2, coaxed from her shelter. (BR)

#### DICTYNIDAE

**Dictynidae gen. sp. A.** This tiny spider (2.5mm) lives on leaves, where it shelters inconspicuously under a diaphanous sheet of cribellate (combed) silk. We found it on the landscaped grounds of Emirates Towers in Dubai, in two settings: (i) at the base of leaf whorls in the top of the decorative sedge *Cyperus alternifolius*, planted beside an artificial pond (Fig. 16.1); and (ii) on the sub-rounded leaves of a large Bougainvillea shrub in the shade of taller trees (Figs. 16.2, 16.3). It bears a resemblance to (but is not identical with) the widespread *Nigma puella* of Europe and North Africa.

Other leaf-dwelling Dictynidae species are probably present in the UAE as well, but they are likely to be equally inconspicuous. We have seen similar (but not identical) small spiders sheltering with their spiderlings under thin sheet webs on plantation shrubs along the Gulf of Oman coast, and small mesh webs consistent with dictynids in the distal leaf whorls of broad-leafed shrubs at Creekside Park in Dubai.

#### ERESIDAE

Members of the family Eresidae are relatively stout, short-legged spiders with a short-haired, velvety appearance. Most species are said to rely on maternal feeding and live colonially as juveniles. Some well-known Eresid species, such as India's *Stegodyphus sarasinorum*, continue to live communally as adults, as a result of which the family as a whole has sometimes been called "social spiders". However, "velvet spiders" seems a more apt and inclusive name, because it appears that the majority of species are in fact solitary.

At least two species of *Stegodyphus* are present in the UAE, neither of which is social in adulthood. The eye pattern of these spiders identifies them as eresids rather than orb-web spiders (Araneidae) and published images are sufficient to confirm them as *Stegodyphus*, a genus of about 21 species that have been recorded from India westward to Morocco. Both of the UAE species seem, from their gross appearance, to belong to the *S. mirandus* species group distinguished by Kraus & Kraus (1989) in a review of the genus.

***Stegodyphus cf. lineatus*.** The spiders in Fig. 17.1 and 17.2 were photographed in the Sharjah desert, where these individuals and other similar ones were typically found in leaf litter under shrubs of the large milkweed *Calotropis procera* (A. Hasan, pers. comm.). A few had woven old *Calotropis* flowers into a rudimentary, web-like nest.

Fig. 17.1 shows a *Stegodyphus* with a jet black dorsal abdomen having a thin white median stripe. It is a match for a much less artistic photo in GRF's collection, taken in the spring of 1997, of a spider temporarily sequestered by the late Carolyn Lehmann during a camping trip to the high dunes in the east of



Fig. 17.1 *Stegodyphus* cf. *lineatus* from the Sharjah desert, showing a dorsal abdominal pattern seen at widespread locations across the UAE. (Photo by Ajmal Hasan)



Fig. 17.2 An alternative dorsal abdominal pattern seen in the Sharjah desert, more typical of female *Stegodyphus lineatus* in Africa. (Photo by Ajmal Hasan)



Fig. 17.3 A frontal view of another black-backed morph of *Stegodyphus* cf. *lineatus*. The facial and anterior cheliceral markings are identical with those of the specimens in Figs. 17.1 and 17.2. (Photo by Ajmal Hasan)



Fig. 17.4 The flared entrance to a burrow of a small *Stegodyphus* cf. *lineatus* in a large *ghaf* tree. The burrow itself extends under the rough bark. (GRF)



the Liwa crescent (where, however, *Calotropis procera* and other large broadleaf shrubs are absent).

The black-backed individuals appear to fall within the range of variation for dorsal abdominal markings in female *Stegodyphus lineatus* as indicated in the drawings of Kraus & Kraus (1989). But even the pale specimen shown in Fig. 17.2 can be encompassed within the broad description of Kraus & Kraus, who say of *S. lineatus* that considerable variation occurs in natural populations and does not seem to be correlated with geographical distribution, ranging from practically white specimens (originally described as a separate species, *S. molitor*) to nearly black specimens. The markings on the face and jaws (chelicerae) (Fig. 17.3) are essentially identical in all of the available UAE photographs.

*S. lineatus* is the most widespread of the species in the genus *Stegodyphus*, and has been recorded across the Eremic Zone from the Western Mediterranean to Tajikistan, including Iran. It is said to favor sunny and dry areas, even arid ones (Melic 1995, H. Prokopenka *pers. comm.*), although the spider itself is active nocturnally (Melic 1995). The young spiders normally disperse after their third moult, but they tolerate their siblings if they are artificially constrained; possibly this is a pre-adaptation to the social behaviour seen in some other *Stegodyphus* species (Melic 1995).

We encountered *S. lineatus* unexpectedly in a burrow in a large *ghaf* tree (*Prosopis cineraria*) within the Dubai Desert Conservation Reserve (Fig. 17.4), in early summer. The flared entrance of cribellate silk at first made us suppose it was a burrow of the filistatid *Sahastata nigra*, but the resident spider emerged briefly while BR was inspecting at close range, and to his surprise it was a *Stegodyphus*. We were able to extract it and confirm that it was a small, pale morph of *S. cf. lineatus* similar to Fig. 17.2.



Fig. 18.1 Gross view of a web of *Stegodyphus nathistmus*. (GRF)

***Stegodyphus cf. nathistmus*.** The authors' first encounter with the genus *Stegodyphus* in the mountain environment of the UAE was in mid-March 2014, in upper Wadi Siji, near Masafi, just outside the south-western boundary of Wadi Wurayah National Park (WWNP). Our attention was drawn to a distinctive low web in the shelter of small boulders on the wadi bank (Fig. 18.1). It featured a relatively large, dense, tube-like retreat, anchored to the north-facing side of one boulder and fanning out below into an imperfect quarter orb-web (Fig. 18.2). Woven into the walls of the retreat were the dried remains of prey as well as a few small pebbles and one shed skin of the spider itself. The prey remains, although abundant, appeared to consist primarily of just two species — a tiny wasp and what appeared to be the dismembered parts of a small grasshopper — but also included a lone "red" ant. We collected the web and only realised thereafter that we had also collected the spider within the retreat.

Days later, we found a second specimen in a much more modest, dense retreat, without an associated web, constructed at the tip of a branch of a *Euphorbia larica* shrub on a rubbly mountain slope within eastern WWNP (Fig. 18.3). In the second retreat, grasshopper parts predominated.

The two spiders appeared to be identical in features and in the pattern of their markings — particularly a triangular face mask; white-fronted, unmarked, hairy jaws (chelicerae); and gently arcuate, diffuse dorso-lateral abdominal stripes, becoming interrupted posteriorly into pale, transverse bars — although the colour and intensity of the markings was not exactly the same in each (Figs. 18.4, 18.5). Most notably, in the second specimen the upper part of the face mask was orange-brown, not black, and the dorso-lateral stripes on the abdomen were medium brown rather than very pale brown (Figs.



Fig. 18.2 Close-up of the spider's retreat in the web shown in Fig. 18.1. The dark spots are the remains of the spider's prey. (GRF)



Fig. 18.3 Another retreat of *Stegodyphus nathistmus*, without a web, at the top of a branch of *Euphorbia larica*. (GRF)



Fig. 18.4 *Stegodyphus nathistmus*: Dorsal view of the spider resident in the web shown in Fig. 18.1. The face mask is relatively dark but the dorsal abdomen is pale. (GRF)



Fig. 18.5 *Stegodyphus nathistmus*: Anterior view of the spider resident in the shelter shown in Fig. 18.3. The face mask is relatively pale and the abdomen bears two subdued dorso-lateral stripes. (BR)

18.5, 18.6). However, Kraus & Kraus (1989) found that facial colour was variable within several species of *Stegodyphus*, even among siblings.

Subsequent records include Jebel Qitab, south-west of Fujairah (B. Roobas, *pers. obs.*), and Wadi Ayim, east of Idhn (P. Olliff, *pers. comm.*).

These specimens of *Stegodyphus* from the Hajar Mountains appear to us to be distinct from *S. lineatus*. Instead, they most closely resemble *S. nathistmus*, described and illustrated by Kraus & Kraus (1989) on the basis of specimens found in the collections of three major European research institutions, originating at localities ranging from Morocco to Aden.

#### EUTICHURIDAE

***Cheiracanthium* sp. A.** We have encountered identical small yellow sac spiders at three relatively mesic, synanthropic locations in Dubai: (i) in a mesquite tree (*Prosopis juliflora*) at Ruwayah plantation; (ii) on a landscaped hedge in Mushrif Park, near the Oasis Garden (Figs. 19.1, 19.2); and (iii) on ornamental lime trees in Creekside Park. In addition to the overall form, distinctive features include the long forelegs and the eye pattern, with the posterior median eyes enlarged and centered dorsally. The male is





Fig. 18.6 *Stegodyphus nathistmus*: Profile view showing the unusual pattern of the eyes, characteristic of Eresidae. (BR)

similar in appearance to the female but smaller and with a relatively smaller abdomen.

The taxonomy of these spiders has been subject to recent revisions. Originally classified with the Clubionidae, they were then included with the Miturgidae but are now generally considered to reside with the Eutichuridae. They are noteworthy because they are capable of delivering a painful toxic bite.

Five species of *Cheiracanthium* are recorded from Iran, all of them with broad Palaearctic ranges (Zamani *et al.* 2015). The spider in our photographs appears to be distinct from published images of *C. mildei*, one of the better known species.

#### FILISTATIDAE

Filistatids have sometimes been called crevice weavers or hole spiders. They build a silken tube shelter in cracks or crevices, with a distinctive flared entrance of many layers of diffuse, combed silk (called cribellate silk), surrounded by radiating silk trip wires (Fig. 20.1). Filistatid males have significantly longer legs than females, but seem to be in short supply for most of the year (A. Zamani, *pers. comm.*). The males of several Middle East and Central Asian filistatid species remain unknown.

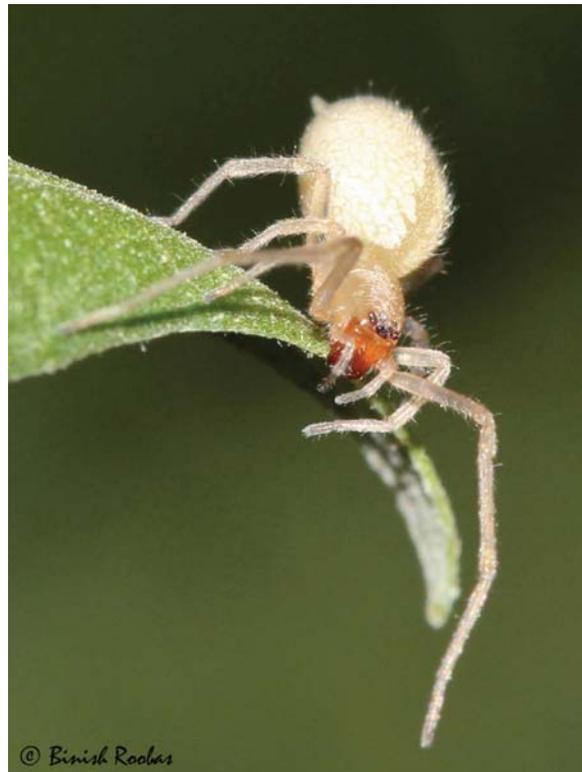


Fig. 19.1 This yellow sac spider *Cheiracanthium* sp. A has been found in mesic synanthropic environments. These spiders can deliver a painful toxic bite. (BR)





Fig. 19.2 *Cheiracanthium* sp. A: Dorsal view of the individual shown in Fig. 19.1. (BR)



Fig. 20. 1 The flared burrow entrance of *Sahastata* cf. *nigra* is typical of the family Filistatidae. It is made of matted layers of fine, diffuse (cribellate) silk. (BR)

***Filistata* cf. *insidiatrix*.** This spider (Figs. 21.1 to 21.3) proved to be very common in synanthropic environments on the Gulf of Oman coast of the UAE. We found it in both urban and agricultural settings, in walls made of cement blocks, alluvial boulders and masonry (Figs. 21.3, 21.4) and even, with its protective tube-like silken sac exposed, in corners at the vertical junction of sheltered walls (Fig. 21.5). Multiple burrows or tubes were often clustered, especially on wall sites. Smaller numbers of what appeared to be the same spider were present among the ruins of the old town at Jazirat al-Hamra, on the Arabian Gulf coast in Ra's al-Khaimah.

This UAE spider appears to be nearly identical with the many published images of *Filistata insidiatrix*, a widespread species found in dry or seasonally dry regions from the Cape Verde Islands through the circum-Mediterranean and eastward to Iran and Central Asia, i.e., a typical eremic distribution.

*F. insidiatrix* is said to be the largest filistatid spider, but all of the many specimens we observed in late autumn 2015 were smaller than all of the specimens we observed of the mountain filistatid, *Sahastata* cf. *nigra*, discussed immediately below. The tube webs appear to serve as nurseries. For example, in many of the tubes shown in Fig. 21.5, only moulted skins and juvenile spiders were found.

A new species of *Filistata*, *F. maguirei*, has recently been recognised from the Iranian shores of the Strait of Hormuz (Marusik & Zamani 2015b) and could reasonably be found in the Northern Emirates as well. The UAE species under discussion here lacks several of the macroscopic features described and depicted for *F. maguirei*, but positive identification of most filistatids can only be made by examination of the genitalia (A. Zamani, *pers. comm.*).

***Sahastata* cf. *nigra*.** This rather large and sinister-looking spider – a shiny, midnight black creature with steeply arched legs, lurking in wait in the mouth of its silken burrow (Fig. 22.1, 22.2) – is moderately common along the west flank of the Hajar Mountains from Siji to Hatta. It has also been found at Jebel Hafit (H. Roberts, *pers. comm.*) and is likely to prove even more widespread. Given its melodramatic appearance, it is surprising that it has not previously attracted attention.

The spider is nocturnal but the mouth of the web is easily recognisable by day. Burrows have been found (and spiders confirmed by night) in consolidated wadi gravel, including bulldozed material, as well as in holes in partly dead *sidr* trees (*Ziziphus spina-christi*) (Fig. 20.1) and under stones in compacted silty soil (Fig. 22.3).

Notwithstanding its striking appearance, identification of this spider, the first filistatid we encountered, was not a straightforward process. The nature of the web initially suggested to us the tube-web dwelling family Segestriidae, and the spider bears a superficial resemblance to the widespread *Segestria florentina*. However, examination of the carapace, eye pattern and hairy underside showed they resembled those of many mygalomorph spiders. Mygalomorph expert Rick West was able to identify our photographs as belonging to the mygalomorph-like araneomorph family Filistatidae and reference to the illustrations in Levi & Levi (1992) of the carapace, eye pattern and particularly the comb-like cribellum confirmed that diagnosis.

We then consulted Yuri Marusik, who, with Sergei Zonstein, is currently reviewing and revising certain filistatid genera. He advised, after reviewing photographs of live and preserved specimens, that the UAE species is most likely *Sahastata nigra*, a species first described from



Fig. 21.1 *Filistata* cf. *insidiatrix*: Female, dorsal view, at a plantation on the Gulf of Oman. (BR)



Fig. 21.2 *Filistata* cf. *insidiatrix*: Female, lateral view, *ex situ*. (BR)



Fig. 21.3 *Filistata* cf. *insidiatrix*: A female perched by night in the mouth of her burrow in a cemented wall in a Gulf of Oman plantation. (BR)



Fig. 21.4 A cluster of burrows of *Filistata* cf. *insidiatrix* in a stone retaining wall within the same plantation. (GRF)



Fig. 21.5 A vertical row of burrow sacs of *Filistata* cf. *insidiatrix* in the sheltered corner of a building in Khor Fakkan. (GRF)



Fig. 21.6 A close-up of the burrow sacs of *Filistata* cf. *insidiatrix* shown in Fig. 21.5. In the few burrow sacs we examined, we found only a couple of juvenile spiders and moulted skins. (GRF)



Muscat in 1897 by French arachnologist Eugène Simon. *S. nigra* is said to be widespread but is still poorly known. The original description omitted characters now considered standard for taxonomic diagnosis and the true male remains undescribed (Y. Marusik, *pers. comm.*).

A new species of *Sahastata*, *S. sinuspersica*, was recently described from coastal sand environments along the Iranian shores of the Strait of Hormuz (Marusik *et al.* 2014, Marusik & Zamani 2015a) and could possibly be found in the UAE as well.

In its gross appearance and habits, *S. cf. nigra* resembles the tarantulas found in the UAE (family Theraphosidae), but the web entrance is more distinctive and the spider appears to be more specialised. Among other things, its legs end in more delicate tarsi than those of tarantulas and (unlike the local tarantulas, *Ischnocolus* spp.) it cannot climb smooth surfaces. We also learned that the elaborate and distinctive silken burrow entrance does not necessarily survive heavy rain.

It is easier to take helpful photographs of this spider in vitro by day (Fig. 22.4) than in the field at night. These show a somewhat paler and less glossy distal abdomen. A suspected juvenile observed by night was also paler, grey-brown in colour, with darker brown legs. Online images (discounting what seem to be obvious misidentifications) show a range of colour from black to pale greyish white.

#### GNAPHOSIDAE

The family Gnaphosidae includes *ca.* 2,000 species worldwide, in more than 100 genera. Most are ground spiders which hunt actively at night by running down or ambushing their prey. By day they shelter under rocks or in crevices, often in a simple silken shelter, or less often in burrows. Gnaphosids can usually be identified to the family level by their general appearance as well as by their habits. The eye pattern distinguishes them from lycosids (wolf spiders), both the carapace and abdomen are relatively elongated, and the broad tubular spinnerets are elongated and readily visible. However, field identification of gnaphosids to genus or species is generally very difficult. The great majority of species are black and/or red-brown without any distinguishing markings. As a result, although we encountered gnaphosids regularly and collected a number of specimens, we have been able to identify only three species, tentatively, to genus level, each of those being atypical of gnaphosids generally.



Fig. 22.1 Lurking in the mouth of its burrow by night, *Sahastata cf. nigra* gives a sinister impression, but this spider is almost helpless away from its web. (BR)



Fig. 22.2 A photographer's nightmare: The dark colouration, reflectiveness and defensive posture of *Sahastata cf. nigra* make it very difficult to take revealing photos in the field. (BR)



Fig. 22.3 GRF excavating a burrow of *Sahastata cf. nigra*, found under a flat stone in the foothills north of Siji. (BR)



Fig. 22.4 *Sahastata cf. nigra* in vitro by day, illustrating the resemblance to tarantulas. (GRF)

***Drassodes?* sp. A.** This small, pale spider (Fig. 23.1) lives in sand and is both widespread and relatively common in the UAE. It has been found by night and day at several locations in the rolling desert of inland Dubai and also by night among the tall dunes in the east of the Liwa crescent.

In the desert of the Dubai hinterland, two specimens were observed and filmed at length, feeding by night on large-winged flying insects, probably Hymenoptera of the families Tiphiidae or Mutillidae (B. Howarth, *pers. comm.*) that were attracted to the observers' lights. The spider occupied a (shallow?) burrow in the sand with a tiny circular entrance, almost imperceptible, from which it emerged periodically to seize flies that landed on the sand (Fig. 23.2). It retreated to the burrow if the observers moved too rapidly or too heavily, but it soon re-emerged, like a jack-in-the-box, notwithstanding the spotlight focused on it, to take advantage of the windfall opportunity, evidently stocking its larder.

It is not a typical gnaphosid, being small and very pale, almost translucent; the only dark markings on it are the eyes and the sturdy fangs (Fig. 23.3). However, the eye pattern, the long abdomen and the two long, prominent spinnerets are consistent with Gnaphosidae. The genus *Drassodes* was suggested by Dr. Helen Prokopenka and is consistent with available published images.



Fig. 23.1 *Drassodes?* sp. A: Dorsal view of a spider on sand flats near Motor City, Dubai. (BR)



Fig. 23.2 *Drassodes?* sp.: This spider in the vicinity of Endurance Village emerged repeatedly from its burrow to stock its larder with wasps attracted by the observers' lights. (BR)





Fig. 23.3 *Drassodes?* sp.: The dark eyes and fangs are clearly visible in this *in vitro* specimen. (GRF)

***Pterotricha* sp(p).** Our knowledge of these interesting spiders, medium-sized burrowers in sand deserts, is attributable primarily to the efforts of Peter Alexander Roosenschoon of the Dubai Desert Conservation Reserve (DDCR), who invited our attention to two female specimens carefully collected and preserved at DDCR (Figs. 24.1 to 24.4). Photographs of the spiders in life in the Dubai desert have previously been posted on the internet by Ryan Ingram, also of DDCR, in 2006 (Fig. 24.5), Dr. Richard Hornby in 2008, and Patricia van Andel in 2012.

They appear to belong to the atypical Gnaphosid genus *Pterotricha*. That determination is consistent with the eye pattern, size, pale colour and burrowing habits (described below) of the spider, as well as the elongated spinnerets tipped by dark, hair-like structures (modified piriform gland spigots). The specimens and photos also agree well with published images of *Pterotricha*, particularly those in El-Hennawy (2014) of specimens of *Pterotricha dalmasi*, found in western and northern Saudi Arabia (although *P. dalmasi* is clearly not identical with the UAE species). A second Saudi species, *Pterotricha lesserti*, is recorded from the Western Province (El-Hennawy 2014). Closer to home, Zamani (*pers. comm.*) has collected *P. loeffleri* from islands in the Strait of Hormuz.

It remains a minor mystery that the two preserved specimens from DDCR, although identical to a casual observer, differ slightly in a number of significant respects, including: the details of the basic eye pattern; the limb proportions; the length of the tarsal claws; the gross pattern and proportions of the ventral

abdomen, including the female epigyne; and, most obviously, the relative length of the spinnerets. Those differences do not seem likely to be explicable in terms of immaturity or allometry, but we are reluctant to infer that two different but closely related species were collected in the same place and under the same conditions. The mystery can only be resolved by further collection and study.

Peter Roosenschoon was able to provide an account of various aspects of the behaviour of the *Pterotricha* sp(p). at DDCR. He was accustomed to see their burrows at dawn on firm sand flats, particularly in an area where drip irrigation supported the growth of landscaped tree species (Fig. 24.6). Burrows might be either open or closed. Open, the burrows are seen to be vertical, silk-lined, the size of a small finger, and surrounded at a short distance by a crater of soft sand, typically with many spider footprints in it (Fig. 24.7).

If a burrow was open, he could cause the spider to expose itself by gently dropping fine sand into the burrow, whereupon the spider would surface and commence to spin a silken cover for its shelter. He infers that they follow the same procedure when not hunting, closing the shelter and letting the sand drift over the cover. He has seen no evidence of trap door behaviour; rather, the closing and covering of the tube burrow seem intended to provide shelter and security. On the other hand, when a burrow is open, he has sometimes seen threads of silken trip wires extending radially, often ending in tiny balls of silk. If these are disturbed the spider normally emerges to investigate.



Fig. 24.1 *Pterotricha* sp.: Frontal view of a preserved female specimen from Dubai Desert Conservation Reserve. (BR)



Fig. 24.2 *Pterotricha* sp.: Dorsal view of the specimen shown in Fig. 24.1, showing the greatly elongated spinnerets. (BR)

Finally, female *Pterotricha* sp(p). carrying young spiderlings on their backs were relatively common at DDCR in September and October 2015.

Photographs by Dr. Richard Hornby from Dubailand and the desert south of the Abu Dhabi Truck Road in 2008 and 2011 (Fig. 24.8) show similar spiders that appear to be *Pterotricha*, but possibly a different species. In particular, the dorsal abdominal markings shown in Fig. 24.8, resembling a stylised fern, are relatively prominent and similar to those of *Pterotricha* in online images from Europe, e.g. *P. simoni*.



Fig. 24.3 *Pterotricha* sp.: Lateral view of the specimen shown in Fig. 24.1. (BR)



Fig. 24.4 *Pterotricha* sp.: Dorsal view of a second specimen from DDCR, smaller and possibly immature, showing differences in a number of morphological details. (BR)



Fig. 24.5 *Pterotricha* sp. in life, on a sand sheet at DDCR. (Photo by Ryan Ingram)





Fig. 24.6 An open burrow of *Pterotricha* sp. at dawn on a sandy flat at DDCR. The burrow is at bottom center. (GRF)



Fig. 24.7 Close-up of an open *Pterotricha* burrow at DDCR. (GRF)



Fig. 24.8 A probable *Pterotricha* sp. photographed by day in the desert south of the Abu Dhabi Truck Road. (Photo by Richard J. Hornby)





**Gnaphosidae gen. sp. A.** This tiny spider, only 2 millimetres long (Figs. 25.1, 23.2), was observed by night in a gravel wadi bed by BR, while he was attempting to collect a different small gnaphosid specimen; otherwise it would almost certainly have escaped our notice. Observation both in the field and in the laboratory suggest that it is an ant mimic.

Distinctive features, visible even to the naked eye, are the diffuse white medial shield on the central carapace and the paired white “lollipop” markings on the anterior dorsal abdomen. The latter became greatly distorted in the preserved specimen, owing to inflation of the outer skin of the abdomen after preservation, then deflation during positioning for photography. Our original observations also recorded a white stripe on the

ventral abdomen, but only a trace of this can now be seen in the preserved specimen.

As to identification, it is possible to exclude a number of taxa known to include ant mimics, such as various salticid genera. From a comparison of available images, we believe that this spider belongs to one of several ant-mimicking genera within the Gnaphosidae, most likely *Micaria* or *Poecilochroa*, or possibly *Callilepis*. This remains speculative, but many online images of *Micaria* spp. (mostly from North America and Europe) appear very similar in terms of various features of gross morphology and the pattern of markings, specifically a pale, central dorsal marking on the dark carapace and paired white dorsal markings on the abdomen.



Fig. 25.1 Gnaphosidae gen. sp. A: The 2 mm female seen here *in vitro* is an ant-mimicking species. It was noticed and captured by BR in upper Wadi Hiluw, by night, while he was attempting to capture a different ground spider. From a comparison of available images, the authors believe that this spider belongs to one of several ant-mimicking genera within the Gnaphosidae, most likely *Micaria* or *Poecilochroa*, or possibly *Callilepis*. (BR)



Fig. 25.2 Gnaphosidae gen. sp. A: A frontal view of the specimen shown in Fig. 25.1, after preservation. This is not a very revealing photograph but it shows the proportions of the spider, particularly the relatively long legs. (BR)



Fig. 26.1 A typical ground-running gnaphosid, resembling the widespread *Drassodes lapidosus*, photographed shortly after dark beside a wadi bed in the Hajar Mountain foothills. (BR)



Fig. 26.2 A relatively colourful and widespread but still unidentified gnaphosid collected by day under a large Acacia tree on a gravel terrace in the Hajar Mountain foothills near Siji. The same spider has been photographed on a gravel terrace in Wadi Sfai and in a plantation at Mirbah on the Gulf of Oman coast. (BR)





Fig. 26.3 This gnaphosid spider was found by night on the horizontal trunk of a toppled but living Acacia tree.

**Other Gnaphosidae spp.** Figs. 26.1 to 26.3 show examples of a number of the ground-running gnaphosids that we encountered in gravel wadis and on adjacent terraces and slopes, but have been unable to identify further. By day, they were often found sheltering under rocks. They are fast moving on the ground and in some cases it was possible to capture them only by exhausting them, a tactic which may account for the subsequent unexpected deaths of several specimens. It would not be surprising if the UAE spider fauna includes widespread semi-arid region gnaphosids such as *Drassodes lapidus*, and perhaps a species of *Zelotes*.

#### HERSILIIDAE

***Hersiliola* cf. *macullulata*.** This small, swift spider with vividly banded legs (Fig. 27.1) was found by day under a rock on a gravel terrace in Wadi Wurayah National Park. The eye pattern marks it as a member of the Hersiliidae, as does the very short third pair of legs, but it does not exhibit the pair of greatly elongated spinnerets that is generally said to characterise members of that family. Jocqué & Dippenaar-Schoeman (2007) write of hersiliids that “they have diverse lifestyles, ranging from wandering tree-trunk-dwellers to ground-dwelling web-builders. The hunters run around their prey while producing a band of silk to ensnare them.”

We are grateful to Alireza Zamani for his suggestion that our photo is probably *Hersiliola macullulata*, which he has recently collected from an Iranian island in the Strait of Hormuz (A. Zamani, pers. comm.). The genus *Hersiliola* is a ground-dwelling genus that does not have the distinctively long spinnerets of most other Hersiliidae. It is said to be very common in deserts and dry mountains (Marusik & Fet 2009).

*H. macullulata* has been recorded from the Iberian Peninsula across North Africa to the Levant and Yemen, as well as Iran, but reports from Central Asia have not been sustained

(Marusik & Fet 2009). A congener, *H. simoni*, is broadly sympatric with *H. macullulata* in the Iberian Peninsula and North Africa, but is not confirmed to extend eastwards beyond the Levant. Some records of *H. simoni* are believed to be misidentifications of *H. macullulata* (Marusik & Fet 2009).

#### LINYPHIIDAE

The Linyphiidae are a very large family of mostly very small spiders with some 562 genera and more than 4,300 species, said to be particularly well represented in the temperate and cooler regions of the Northern Hemisphere (Jocqué & Dippenaar-Schoeman 2007). We have not knowingly encountered any representatives of this family in the course of our investigations, but some Linyphiidae could be mistaken for small or immature Theridiidae. Andrei V. Tanasevitch has described the Arabian Peninsula as a *terra incognita* as regards the Linyphiid spider fauna. He recognised seven species in this family from material collected by the UAE Insect Project, of which four were widespread but three were new to science (Tanasevitch 2010). All are listed in the index. At that time, only one other Linyphiid species had been identified from Arabia.

#### LYCOSIDAE

Lycosidae are also called wolf spiders. As the name suggests, most species are active hunters, although, unlike wolves, they are solitary and do not hunt in packs. The pattern of the eyes is diagnostic. For the most part they do not spin webs, although some may construct silken burrows or nests (but see *Hippasa* cf. *agelenoides*, below, for a local exception to the rule). A few are ambush hunters which dart out from their burrows to capture passing prey.

Male and female wolf spiders are generally similar in appearance, although males usually have a smaller abdomen and longer and more slender legs. Female wolf spiders typically construct a relatively large and roughly spherical egg case which they carry under the rear of the abdomen, attached to the spinnerets. In most species the female carries her newly-hatched offspring on her back.

Wolf spiders are relatively easy to locate at night because their eyes reflect a flashlight beam as iridescent green, jewel-like points of light, if the observer's view is aligned at a low angle to the light source (as, for example, when using a headlight).

Determination of individual species within many lycosid genera can be especially difficult. Even many UAE wolf spiders of different genera appear quite similar to the casual observer, having a pale medial stripe on the carapace, a variably mottled abdomen and banded legs.



Fig. 27.1 *Hersiliola* cf. *macullulata*: A small, fast-moving spider with vividly banded legs, found under a rock in Wadi Wurayah. The unusual eye pattern is diagnostic of the family Hersiliidae, but the genus *Hersiliola* does not exhibit the greatly elongated spinnerets that generally characterize that family. (BR)

Several of our photographs and specimens suggest the possible presence of lycosid species not confidently distinguished in the field (see, e.g., Figs. 28.4, 33a.1 and 33a.2). As mentioned above, publication of a more definitive treatment of UAE Lycosidae is anticipated, based on collections by the UAE Insect Project (Alderweireldt & Jocqué, *in press*). It is understood to include 17 species, of which 3 are new to science (A. van Harten, *pers. comm.*).

***Evippa arenaria*.** This large wolf spider (to 10 mm total length and 45 mm diameter) (Figs. 28.1, 28.2) is common in sand environments throughout the UAE, from deep within the high dunes of Liwa to the more accessible rolling sands of the Dubai desert (Endurance Village area) and Jebel Mleiha (Fossil Rock). It is the most likely ground spider to be encountered in sand environments and can be seen in a number of online images from the UAE, but without identification. The markings on the dorsal carapace are consistent across the many specimens photographed and/or collected in the UAE, although the dorsal abdominal markings are somewhat variable. It has also been found on the gravel plains at Madam, near Jebel Rawdah. Observations have been primarily but not exclusively by night.

Given its extensive range in the UAE, this spider seemed likely to be a regionally widespread species, but a confident identification proved elusive. For that reason we have always referred to it simply as the “Sand Wolf”. Our provisional identification as *Evippa* was

circumstantial and was based on a combination of (i) close similarity to *Evippinae* gen. sp. A, the most common spider in UAE mountain areas (discussed below); (ii) the absence of any (known) reasonable candidate species in the sister genus *Xerolycosa*; and (iii) the presence of one or more potentially suitable candidates in the genus *Evippa*.

In particular, *E. arenaria*, the type species for the genus *Evippa*, is similar in size and is found across arid North Africa and into the Levant, so it seemed a good candidate for the Sand Wolf seen in the UAE. However, very little has been written about *E. arenaria* and for a long time we were able to find only a single (but suggestive) published image, online at <http://www.insectour.com/Web/?PageType=9&ItemID=61615>. More recently, Roberts (online) has published an image of the Sand Wolf at Jebel Hafit accompanied by an identification by Dmitri Logunov as *Evippa arenaria*, confirming our own inference.

The very largest Sand Wolf which we have encountered (45 mm diameter) was a female with a disproportionately large abdomen (Fig. 28.3). This condition was explained when, after four days in captivity, she was seen carrying an egg case, her abdomen once again more normal size. Peter Roosenschoon reports that females carrying young were common at the Dubai Desert Conservation Reserve in September and October 2015.

A very similar-looking, but smaller, wolf spider proved to be common along the saline ground



Fig. 28.1 The Sand Wolf *Evippa arenaria*: This large wolf spider is common and widespread in the sand deserts of the UAE but it has only recently been confirmed as *Evippa arenaria*, a desert species previously known from North Africa to the Levant. (BR)



Fig. 28.2 *Evippa arenaria*: A profile from near Endurance Village showing the raised head and fluted colour band. (GRF)



Fig. 28.3 Dorsal view of a very large, gravid female *Evippa arenaria* from the Dubai Desert Conservation Reserve, showing carapace and abdominal markings. (GRF)



Fig. 28.4 *Evippa* sp.?: This spider, closely resembling the widespread *Evippa arenaria*, but uniformly smaller, is common on saline ground fringing Khor Hulaylah, Ra's al-Khaimah. (BR)

fringing the Khor Hulaylah salt marsh (Fig. 28.4) and could represent a second, related species. *Evippa praelongipes*, said to be one of the smaller *Evippa* species, has previously been recorded in Arabia and Iran (Alderwielde 1991, El-Hennawy 2014). Another possibility is *Evippa fortis*, which has recently been found nearby in Iran, on Hormuz Island in the Strait of Hormuz (A. Zamani, pers. comm.)

Potential confusion may arise in the field between the Sand Wolf (*E. arenaria*) and the rather similar Evippinae gen. sp. A (discussed below), each of which is common in its respective environments. Both are relatively 'tall' spiders having a raised head area, like the conning tower of a submarine, which is dark rust to brown in colour with a pale median band. *E. arenaria* can generally be distinguished from

Evippinae gen. sp. A by its sandy habitat and its larger adult size. Other differences include the following:

- (a) In *E. arenaria*, the margins of the pale median band on the carapace are fluted, not straight or parallel-sided as in Evippinae gen. sp. A, and the interior of the pale band is marked with a consistent pattern of longitudinally-oriented black dashes (compare Figs. 28.1, 28.2 and 28.3 with Figs. 33.1, 33.2 and 33.3).
- (b) In *E. arenaria*, the abdomen is paler and the dorsal abdominal markings are relatively diffuse, whereas in Evippinae gen. sp. A, the abdomen always shows a dark brown background with parallel white dots and variably prominent transverse white lines (Fig. 33.2).





***Hippasa cf. agelenoides***. Spiders of the genus *Hippasa* are very specialised wolf spiders whose behaviour and overall appearance closely parallel those of the so-called funnel or sheet web spiders (Family Agelenidae). Like Agelenidae, *Hippasa* species construct sheet webs having a funnel-shaped retreat, they are elongated in shape, and their legs are covered with coarse bristles (Fig. 29.1).

We found their funnel webs to be locally very common in the Jimi Oasis in Al-Ain in summer 2014, in a fallow field overgrown with the grass *Cenchrus echinatus*. The same spider (Fig. 29.2) was also locally common along a shallow, peri-agricultural stream on the outskirts of Hatta (Fig. 29.3). In the field we considered these to be a probable Agelenidae species, but examination of our photos showed that the pattern of the eyes is that of a wolf spider (compare Figs. 29.1 and 29.2 with Figs. 4.2 and ). This led us to redirect our research to the Lycosidae, where our attention was quickly drawn to *Hippasa agelenoides*, whose name correctly indicates its resemblance to the Agelenidae.

Our photos closely resemble many published images of *H. agelenoides*. The recognised range of *H. agelenoides* is from India to Taiwan (World Spider Catalog 2015), but it would not be surprising to find that it has been “imported”, particularly from the Indian Subcontinent, to agricultural and peri-agricultural sites in the UAE. A few Middle East representatives of *Hippasa* also exist but are poorly studied (World Spider Catalog 2015). GRF has encountered what appears to be an identical spider at 1500 metres elevation in the hill country of Nepal, suggesting that the UAE species is likely to represent one of the more widespread species.



Fig. 29.1 Frontal view of a *Hippasa cf. agelenoides* in its web near Hatta, showing the eye pattern which confirms it as a lycosid spider, not an agelenid. (BR)



Fig. 29.2 Dorsal view of another *Hippasa cf. agelenoides* near Hatta, showing the abdominal markings for comparison with the agelenid cf. *Benoitia lepida* (Fig. 4.3). (BR)



Fig. 29.3 The environment of *Hippasa cf. agelenoides* near Hatta, showing numerous sheet-and-funnel webs on the sparse grass at the left and the wadi bank at the right. (GRF)





Fig. 30.1 *Hogna radiata*: Dorsal view of a large male, showing most of the characteristic features mentioned in the text. (BR)



Fig. 30.2 *Hogna radiata*: Oblique view of a female, showing the relatively flat head area. (BR)



Fig. 30.3 *Hogna radiata*: Frontal view of a captive male, showing the eye pattern. (BR)

***Hogna radiata***. This is a large wolf spider (body length to at least 13mm and diameter in life to at least 40mm) which seems to favor relatively mesic environments. Its global range extends across the Old World eremic zone from Southern Europe and North Africa through the Middle East and Iran to Central Asia.

The presence of *H. radiata* in the UAE was first confirmed by Dmitri Logunov from a specimen collected by Huw Roberts at Jebel Hafit in Al-Ain (Roberts, online). We have found it among plantations on the Gulf of Oman coast at Mirbah (Figs. 30.1 to 30.3) and at Khatt in Ra's al-Khaimah, and we have received a photographic record from a suburban residence in Dubai (H. Struiksma, *pers. comm.*). In the plantation environment it was active by both night and day.

The shape and pattern of the carapace and the arrangement of the eyes resemble those of the genus *Lycosa*, in which it was once placed. Its gross appearance, especially its long legs and

colouration, is similar to the more common UAE wolf spiders *Evippa arenaria* and *Evippinae* gen. sp. A. However, it is distinguishable by a number of consistent details, including: its broader carapace with a wide, yellowish (not buff) margin; its flatter head region; its relatively small abdomen (somewhat larger in the female); the three hairline black dashes (one posteriorly and two laterally) within the pale medial band on the carapace; the two black spots on the anterior abdomen, with a halo of vivid yellow; and the two subdued orange dorsolateral stripes on the anterior abdomen, all shown in numerous published images.

*H. radiata* also differs significantly from *E. arenaria* and *Evippinae* gen. sp. A in its behavior in captivity. In a collecting jar, *H. radiata* deploys fine strands of silk and smaller individuals can climb the smooth walls of a plastic or glass or container. That difference alone suggested to us that this spider did not belong to any of the other lycosid genera we had encountered.





Fig. 31.1 A male of *Pardosa* sp. A, displaying by waving its white-and-black pedipalps. (BR)

***Pardosa* sp. A.** The Hajar Wadi *Pardosa* lives on damp gravel and cobbles beside wadi pools or gently flowing channels in the wadis of the Hajar Mountains of the UAE and neighbouring Oman. It is unremarkable in size or appearance but it is one of the most commonly encountered spiders because it wanders actively by day and attracts attention by its habit of running across the surface of small water bodies. The male courtship display is also conspicuous, consisting of periodic repetitions of a few staccato waves of

the male's hairy pedipalps, which are a contrasting white colour with black tips (Fig. 31.1).

The female lacks the distinctive white palps of the male and has a larger abdomen. Her colouration is cryptic; an overall pattern is discernible but development of individual elements is variable among individuals (Fig. 31.2, 31.3). As in many other wolf spiders, the female carries her spherical egg case under the rear of her abdomen (Fig. 31.4) and carries her newly-hatched offspring on her back (Fig. 31.5).

The pear-shaped carapace and the banded legs adorned by sparse but very long, straight, dark spines, as well as the overall size and appearance, are all consistent with the genus *Pardosa*, a very large genus of small to medium-sized spiders that are typically active by day, often in bright sunlight. *Pardosa* spiders build no permanent retreat, but are said to confine their hunting to a particular area (Levi & Levi 1990). However, they can transport themselves by "ballooning".

The Hajar Wadi *Pardosa* appears to us to differ from the *Pardosa* species that is present, but much less common, in the limestone karst terrain of the Ru'us al-Jibal (the mountains of the Musandam peninsula). Permanent surface water is extremely rare in the Ru'us al-Jibal (Feulner



Fig. 31.2 A typical female of *Pardosa* sp. A from Wadi Hassatayn, near Hatta. (BR)



Fig. 31.3 An atypical female *Pardosa* from Wadi Asfani. This individual is relatively pale overall, and the black "saddlebags" on the anterior flanks of the abdomen lack the white centres seen in Fig. 31.2. The substrate in both Figs. 31.2 and 31.3 is the fibrous collagen residue of a desiccated algal mat. (GRF)





Fig. 31.4 A female *Pardosa* sp. carrying its egg case. (GRF)



Fig. 31.5 A female *Pardosa* sp. carrying its newly-hatched offspring on its back. The spider is extremely well camouflaged against the multi-coloured background of damp wadi gravel and algae. (GRF)

2011), but spiders have been observed on gravel beside pools in remote, shaded gorges where water is present much of the time, and perhaps year-round in wetter years.

*Pardosa* is such a large genus that it is unrealistic to hope to identify the local species without a specialist determination. In neighbouring Iran, 18 species of *Pardosa* have so far been identified (Zamani *et al.* 2015).

The egg case of the Hajar Wadi *Pardosa* is white or off-white (Fig. 31.4), whereas the egg cases of some common Old World *Pardosa* spp. have been described as coloured, e.g., blue, green, brown, grey or yellow. However, photographs and illustrations indicate that those colours are best described as tints and may be subject to a certain amount of interpretation in the field. In any case, the Hajar Wadi *Pardosa* is evidently distinct from several of the most common *Pardosa* species found in Europe and Asia, e.g. *P. amentata*, *P. lugubris* and *P. nigriceps*, in all of which the male has black

pedipalps, not white (Jones 1983, Preston-Mafham 1985, Hillyard 2004).

In the UAE and Oman, most of our observations of female Hajar Wadi *Pardosa* carrying an egg case or babies have been in the summer months (June, July and August) but we also have records from November through February, so it appears that breeding in our area is not strictly seasonal.

An interesting question is how the Hajar Wadi *Pardosa* responds to the occasional flooding of its wadi habitat, which seems to pose a significant threat to a small, non-flying terrestrial species. The answer is not known, but the example of a related species, as described by Hillyard (2004), expands the range of possibilities. The widespread wolf spider *Arctosa cinerea* inhabits sandy and stony riverbanks in North America, Europe, North Africa and Asia, where it is active both day and night. *A. cinerea* builds a silken burrow beneath stones, and, if covered by rising water, it remains in its burrow and breathes from bubbles of air.

***Wadicosa fidelis*.** This widespread Palearctic spider is common by day on damp soil and organic matter beside dams, sewage and agricultural ponds, aflaj, irrigated fields and even well-watered lawns. It is not normally found on damp gravel wadi beds, however, where another Lycosid, the Hajar Wadi *Pardosa* (*Pardosa* sp., discussed immediately above), is found instead.

The male *W. fidelis* (Fig. 32.1) is easily recognisable by the large, pale marking on the dark carapace, resembling a wide-necked urn, and by the relatively small abdomen. Nevertheless, a number of online images posted as "*Wadicosa fidelis*" appear mistakenly to show the Hajar Wadi *Pardosa*. The female *W. fidelis* (Fig. 32.2), however, is undoubtedly more difficult to distinguish from many other wolf spiders, including particularly the female of the Hajar Wadi *Pardosa*, which inhabits similar environments.

**Evippinae gen. sp. A.** The wolf spider shown in Figs. 33.1 and 33.2 is the most common spider found in dry areas of Hajar Mountain wadis and on adjacent gravel terraces and stony slopes. It is primarily but not exclusively nocturnal. In default of an authoritative identification, for many years we have referred to it as the "Zipperback" spider because of the pattern on the dorsal abdomen. As is the case for many other wolf spider mothers, the female carries her newborn spiderlings on her back (Fig. 33.3).

Like its sand-dwelling UAE relative, the Sand Wolf (*Evippa arenaria*), the Zipperback is easy to locate at night because of the green, gem-like



Fig. 32.1 *Wadicosa fidelis*: A male, showing the characteristic urn-shaped marking on the carapace and the relatively small abdomen. (BR)



Fig. 32.2 *Wadicosa fidelis*: The drab, cryptic female is difficult to distinguish from some other lycosid females. (BR)



Fig. 33. 1 Evippinae gen. sp. A: The wolf spider shown here is the most common spider found in dry Hajar Mountain wadis and on adjacent gravel terraces and stony slopes. It is believed to belong to the genus *Xerolycosa*, but positive identification awaits an expert determination. (GRF)



Fig. 33a.1 Evippinae gen. sp. B: The wolf spider shown here, found on the gravel plains of UAE's Gulf of Oman coast, closely resembles Evippinae gen. sp. A, but differs consistently in a number of subtle details. (BR)



Fig. 33a.2 Evippinae gen. sp. B: A preserved specimen, showing the inflected margins of the medial stripe on the carapace, the colour and patterning of the several lateral bands on the carapace, and the dark spots (versus dark bands) on the upper side of the proximal leg segments, all of which distinguish it from Evippinae gen. sp. A. (GRF)





Fig. 33.2 Evippinae gen. sp. A: A dorsal view of the species shown in Fig. 33.1, believed to be a *Xerolycosa*, showing the pale, parallel-sided median stripe on the carapace and the typical abdominal markings. (GRF)



Fig. 33.3 Evippinae gen. sp. A: A female of the same species depicted in Figs. 33.1 and 33.2, believed to be a *Xerolycosa*, shown here carrying newborn spiderlings. (BR).

reflection from its eyes. That method revealed to us that young spiders were extremely common in late October and early November 2014, after episodes of rain, and again in the spring of 2015.

As to the formal scientific identification of this spider, the genus *Xerolycosa*, which belongs to the subfamily Evippinae, is suggested by a review of images available online and in the literature, but we are unable to draw a more definitive conclusion. *Xerolycosa* is a small genus but two species, *X. miniata* and *X. nemoralis*, are widespread Palearctic residents. They are found in dry environments and could reasonably be present in the UAE, although only *X. miniata* is so far recorded from Iran (Zamani *et al.* 2015). A frontal photograph of the UAE spider (Fig. 33.4) shows the eye pattern depicted for *X. nemoralis* and *X. miniata* in the versioned wiki page of Marusik *et al.* (2011).

Those two species closely resemble each other in gross appearance, and both closely resemble the UAE species. *X. nemoralis* has been said to be distinguishable in the field by the presence of paired black "saddlebag" markings on the anterior flanks of the abdomen. Those markings are generally absent in the common UAE *Xerolycosa*, although some specimens show a small area of dark colour. However, such markings are not limited to a single species or to the genus *Xerolycosa*; several other UAE lycosids sometimes show "saddlebag" markings, e.g., females of the Hajar Wadi *Pardosa* and of *Wadicosa fidelis*.

Notwithstanding our belief that the Zipperback is likely to be a *Xerolycosa* species, and one similar to *X. miniata*, we have catalogued it more generally as Evippinae gen. sp. A, in deference to the forthcoming account of UAE Lycosidae by Alderweireldt & Jocqué (*in press*), which we hope will definitively resolve the nomenclature. In

fact, as indicated in the discussion of *Evippa arenaria* above and Evippinae gen. sp. B below, the UAE is likely to be home to multiple species of *Xerolycosa*, *Evippa* and possibly other Evippinae, potentially including previously unrecognized species.

**Evippinae gen. sp. B.** On the Gulf of Oman coastal plain of the UAE we have encountered wolf spiders (Fig. 33a.1) closely resembling the mountain wadi species discussed immediately above as *Xerolycosa* sp., yet showing subtle but consistent differences in the patterning of the carapace, dorsal spotting rather than banding on the upper (proximal) leg segments, and differences in the nature and density of hairs on the forelegs (Fig. 33a.2). These features suggest that the plains spider represents a distinct species, although probably another *Xerolycosa* or other Evippinae species.

**Lycosidae gen. sp. A.** The lycosid spider shown in Figs. 34.1 and 34.2 was observed only once, in the early 2000s, in the rolling sand desert of the south-eastern UAE, within what is now the Umm az-Zamool Protected Area. It was active in bright sunlight in late morning beside an opportunistic patch of *Sesuvium* sp., a low succulent growing in leakage from nearby "nursery" irrigation of young trees. It is a relatively large spider, approximately the size of the Sand Wolf (*Evippa arenaria*), the most common wolf spider of sandy areas in the UAE.

The shape and pattern of the carapace and the arrangement of the eyes suggested the genus *Lycosa*, and we found that the spider closely resembles published images by Oger (online) and others of *Lycosa tarantula* (Linnaeus, 1758), the Tarantula Wolf Spider, a European species that has also been recorded



Fig. 33. 4 A close-up frontal view of the wolf spider shown in Figs. 33.1 to 33.3, showing the eye pattern depicted in the literature for the two widespread Palearctic species of *Xerolycosa*, *X. miniata* and *X. nemoralis*. (BR)

from the Near East. Suspected spider burrows resembling those of the *L. tarantula* group (Planas *et al.* 2013), bordered by a turret of dry grass, are known from the desert south of the city of Ra's al-Khaimah, in the extreme north-east of the UAE (Fig. 34.3).

Caution is required, however, since the genus *Lycosa* is a very large one, with more than 225 recognised species. Alireza Zamani rejects the possibility of *L. tarantula* and suggests instead that *L. praegrandis* is a more likely candidate (A. Zamani, *pers. comm.*). Both species appear in The Checklist of Spiders of Iran, but the record of *L. tarantula* has been questioned (Zamani *et al.* 2015).

The possibility also exists that this spider represents an extremely differentiated, desert adapted morph of *Hogna radiata*, discussed above. A number of online images posted as *H. radiata* show a spider that resembles a pale form of *L. tarantula*, but it appears to us that many of the images in online collections have conflated images of *H. radiata* and *L. tarantula* (not to mention other species), making it difficult to know to what extent the labeling of any individual image can be relied on. *H. radiata* is not a burrowing species, although some other members of the genus *Hogna* are burrowers.

A species of *Hogna* other than *H. radiata*, or even another genus, is also possible. In Iran, two other species of *Hogna* have been recorded, as well as more than 15 species from the similar-appearing genera *Arctosa* and *Trochosa* (Zamani *et al.* 2015). The most up-to-date

checklist for Saudi Arabia lists *Hogna ferox* (from the Taif area) but no other *Hogna*, *Arctosa*, *Lycosa* or *Trochosa* species (El-Hennawy 2014).

#### OECOBIIDAE

***Oecobius cf. navus***. This small spider is a cosmopolitan species often found in homes. A tiny male that appears to be *Oecobius navus* (Fig. 35.1) was found in the authors' apartment in urban Dubai. Many more, including females (Fig. 35.2), were found a couple of weeks later on the grounds of the neighboring Emirates Towers complex, in grooves on concrete bollards along a sidewalk beside artificial ponds and on nearby stony ground. The web is a small, flat, star-shaped shelter (Fig. 35.3) – a central disc with protruding anchor threads – built on rocks, leaves, walls or corners.

Subsequently, we found the same spider to be common in a similar setting, the recesses of bas relief decoration on the walls of a large housing compound in downtown Dubai. Oecobiidae are said to prey largely on ants. We did not observe feeding by *O. navus*, but small ants were also present on the concrete bollards.

We have occasionally seen more or less identical star webs on rocks in mountain wadis and on the trunks of *Acacia tortilis* trees on gravel plains, but collection of specimens proved very difficult as the tiny spiders fled rapidly at the first sign of disturbance.

A variety of common names have been used to refer to *O. navus*, including Star Web, Disc Web, Stucco, Wall, Baseboard and Round-





Fig. 34.1 Lycosidae gen. sp. A on damp sand near a cultivated plot within the dunes near Umm az-Zamool, in the south-east of the UAE. (GRF)



Fig. 34.2 *Lycosa* sp. A: An oblique view of the spider shown in Fig. 34.1, showing its face. (GRF)



Fig. 34.3 A suspected spider burrow in the desert south of Ra's al-Khaimah city, resembling burrows attributed to species of the *Lycosa tarantula* group. (GRF)

Headed spider. Its small size makes inspection difficult, but among the features that can be used to identify it are the round carapace, the eye pattern and the distinctly hairy anal gland. Comparison with online images (Google) suggests that the patterns of markings on males and females are relatively stable, independent of the exact colour and intensity. It is those patterns that we have used to make a provisional identification. They appear to be distinct from the markings of the equally cosmopolitan congener *O. cellariorum*, which has been recorded from Iran (Zamani *et al.* 2015). A second Iranian *Oecobius*, *O. putus* has been found on Iranian islands in the Strait of Hormuz (A. Zamani, *pers. comm.*).

We have also seen similar but less rigorously star-shaped webs on the exterior walls of buildings, suggesting that one or more additional species of Oecobiidae could be present in the UAE.

#### OXYOPIDAE

Lynx spiders (Oxyopidae) are hunting spiders identifiable by their eye pattern and by clusters of unusually long, erect setae (bristles) on their legs. Most species are tropical and are found on or in vegetation, and is often said that they are typically green coloured. A number of Palaearctic species are nevertheless associated with dry or seasonally dry climates, and are brown in colour. The genus *Oxyopes* is a very large one, including more than 300 recognised species.

Currently, records of at least five species of Oxyopidae are known from the UAE and neighbouring Oman. In addition to the four species listed below, Roberts (online) has posted a record of *Oxyopes sobrinus* from the Al-Ain area.

Lynx spiders are generally considered to be diurnal hunters, so it was somewhat surprising to find them, in several instances, active by night. The best explanation is probably the high daytime temperatures (>38°C / 100°F) that prevail in the UAE for six months of the year. Four species of *Oxyopes* have so far been recognised from from Iran, including the first two listed below, but all records to date are from northerly provinces (Zamani *et al.* 2015).

***Oxyopes* cf. *badhyzicus*.** The rather subdued, brown-and-white striped individual shown in Fig. 36.1 was photographed by day on the west flank of Jebel Hafit, in the area of the UAE-Oman border, during a vegetation survey in March 1998. Roberts (online) has since published a photograph of a very similar spider from the same vicinity, accompanied by a provisional photographic identification by Dmitri Logunov as *Oxyopes* cf. *badhyzicus*, a species known from



Fig. 35.1 *Oecobius* cf. *navus*: A tiny male found in the authors' apartment. (BR)



Fig. 35.2 A female *Oecobius* cf. *navus*, one of a number found on a cobbled median strip on the grounds of Emirates Towers. (BR)



Fig. 35.3 A star-web, characteristic of *Oecobius navus*, in the groove of a concrete bollard on the grounds of Emirates Towers. (GRF)

the Levant to Central Asia. The colour pattern appears well suited to conceal the spider on its substrate of dry vegetation, sandy soil and angular pebbles of pale limestone and dolomite.

***Oxyopes* cf. *lineatus*.** Two tan-and-white striped female lynx spiders (Fig. 37.1) were observed by night on stems in clumps of the sedge *Cyperus conglomeratus* within the Dubai Desert Conservation Reserve (DDCR), in an area of vegetated sand flats dominated by the bristly dwarf shrub *Heliotropium kotschyi*, and where drip irrigation of ghaf tree seedlings (*Prosopis cinerareus*) encouraged relatively dense growth of native dwarf shrubs as well.

Comparison with a large number of online photos permits relatively confident identification of these spiders as *Oxyopes lineatus*, which has a recognised Palaearctic range, including the Eastern Mediterranean (Levy & Amitai 1982), Iran (Zamani *et al.* 2015) and India. *O. lineatus* is variable in appearance. Exact colouration and details of the colour patterns differ among

published images, but the basic elements of the pattern are consistent and several images are essentially identical to the DDCR photos.

***Oxyopes* sp. A.** The mottled brown individual shown in Fig. 38.1 was first encountered climbing in thick reeds (*Phragmites australis*) in a drainage ditch at Ruwayah plantation, a venerable agricultural site on the outskirts of Dubai city. The specimen appears to be a female. In form and colour pattern it resembles the Palaearctic *O. ramosus*, particularly a number of images from northern and central Europe (Google images), but in the Ruwayah spider the pattern is less well defined than in any available images. (NB: Some online images appear to overlap with *O. lineatus*.)

Its colouration seems anomalous in relation to its habitat of green reeds but the spider was demonstrably a successful hunter. When we observed it at approximately 10 pm, it was eating a *Larinia* cf. *chloris*, a small, nocturnal orb-web spider that is abundant in the reeds at Ruwayah (discussed above). Subsequently, we found several individuals of the same species at two of Dubai's public parks, Mushrif Park and Creekside Park, in each case active by night in the top of low green hedges in areas shaded by large trees.

***Peucetia* cf. *viridana*.** This spider has long been known, but not previously recognised, from a single record. A photograph taken by Dr. Marijke Jongbloed and published in *The Living Desert* (Jongbloed 1987), at p. 81. The photograph (Fig. 39.1) is a good match for the female of the Asian Green Lynx Spider *Peucetia viridana*, found in India, Sri Lanka, Myanmar and Thailand (Sebastian & Peter 2009, Venkataraman 2010, Google images). [NB: *P. viridana* should not be conflated with *P. viridans*, the American Green Lynx Spider.]



Fig. 36.1 *Oxyopes* cf. *badhyzicus*: A very pale individual from the base of the west flank of Jebel Hafit. The colour pattern appears well suited to conceal the spider on a substrate of dry vegetation, sandy soil and angular pebbles of pale limestone and dolomite. (GRF)



Fig. 37.1 A Striped Lynx spider, *Oxyopes* cf. *lineatus*, in a clump of *Cyperus conglomeratus* growing on sand and gravel flats among abundant *Heliotropium kotschyi*. (BR)

The photo site was the gravel outwash plain between the town of Mahdhah and the mountain front oasis village of Abool, in Wilayat Mahdhah, Northern Oman. Abundant vegetation was present nearby in the form of small shrubs such as *Pulicaria glutinosa* (M. Jongbloed, *pers. comm.*) and was probably the spider's customary habit.

Thereafter, this spider went unremarked for more than 25 years, until word of our catalogue project prompted photographic records of additional females from Hajar Mountain sites by Dubai Natural History Group members Tamsin Carlisle and Jean-Paul Berger. One spider was perched, camouflaged, in a leafy shrub of the mallow *Abutilon pannosum* on the edge of an isolated cultivated field; the other was found on the dwarf shrub *Cleome austroarabica* (Fig. 39.2). The male was unknown until this paper had been submitted, when a photo taken at Shawkah in Ra's al-Khaimah was posted online by V.K. Balagopal on a nature photography page (Fig. 39.3) (Facebook Group: Wildlife & Nature Photographers of UAE, <https://www.facebook.com/groups/694081500718604/>) and was called to our attention by H. Struiksma.

#### PALPIMANIDAE

**Palpimanidae spp.** A spider observed by BR by night on stony ground adjacent to sand desert at Jebel Fayah closely resembles a spider photographed

and collected by Siegfried Huber in Oman and identified as a species of Palpimanidae, a family which is typically found under rocks in arid regions (S. Huber, *pers. comm.*). The spider (Palpimanidae gen. sp. A) had a broad body with a heavy first pair of legs, a pale-bluish carapace and dark blue abdomen with diffuse white spotting distally. A second Palpimanidae species, from Masafi (Palpimanidae gen. sp. B), is illustrated in a photo posted without attribution on the SmugMug website (Fig. 40.1) ([www.smugmug.com/gallery/n-zgN82](http://www.smugmug.com/gallery/n-zgN82)).

Palpimanids are considered to specialise in preying on other spiders (Jocqué & Dippenaar-Schoeman 2007).

#### PHILODROMIDAE

**Philodromus sp. A.** This small spider (Fig. 41.1) was observed only once, by night in a mountain front wadi. The position of the posterior lateral eyes in Philodromidae resembles that of wolf spiders (Lycosidae) and both families are active hunters. The small size of the spider (<20 mm diameter), its glossy black carapace with white lateral margins, the relatively small abdomen, and the contrasting brown legs, all correspond generally to the male of the widespread Holarctic species *Philodromus dispar*.

The genus *Philodromus*, however, provides an excellent illustration of the exceptional difficulties of spider taxonomy, since it contains more than 240 accepted species, many of them very similar





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Fig. 38.1 A lynx spider, *Oxyopes* sp. A, perched among dense reeds (*Phragmites australis*) growing in an irrigation channel at Ruwayah plantation, on the outskirts of urban Dubai. When encountered, this spider was feeding on *Larinia* cf. *chloris*, an orb-web spider that is abundant in the reeds. The colour pattern is somewhat surprising for a reed dweller. (BR)



Fig. 39.1 A female Asian green lynx spider, *Peucetia* cf. *viridana*, photographed on the gravel outwash plains along the west flank of the Hajar Mountains in the Mahdhah area of Northern Oman. The colouration of this spider suggests that its customary habitat is more likely to be within the nearby vegetation of small shrubs. (Photo from *The Living Desert* (Jongbloed 1987))



Fig. 39.2 A more recent record of the female *Peucetia* cf. *viridana*, perched in a dwarf shrub in Wadi Asimah. (Photo by Jean-Paul Berger)



Fig. 39.3 The probable male of *Peucetia* cf. *viridana*, photographed along the Hajar Mountain front at Shawkah, Ra's al-Khaimah. (Photo by V.K. Balagopal)



Fig. 40.1 Palpimanidae gen. sp. B: A Palpimanidae species photographed near Masafi. (Photo unattributed. See text for details.)



in gross appearance. In these circumstances it is not possible to attempt to assign our photo to a particular species with any confidence. Examinations by Logunov (2011), discussed in more detail below, have revealed two UAE species of *Philodromus*, both known from elsewhere in the Middle East, but not *P. dispar*.

**Thanatus sp. A.** This small female spider (Fig. 42.1) has been encountered by night on gravel terraces in Wadi Sfai and Wadi Daynah, on the west flank of the Hajar Mountains, in both autumn and winter. In gross appearance, including the cardiac mark, it resembles wolf spiders of the genus *Alopecosa*, but the relatively broad carapace and the details of the eye pattern identify it as the Philodromidae genus *Thanatus*.

Logunov (2011) recognised five *Thanatus* spp. from the UAE, all of them known from elsewhere in the Middle East: *T. fabricii*, *T. fornicatus*, *T. lesserti*, *T. sepiacolor* and *T. setigerus*. Two range east to Central Asia and one west across the Sahara to the Canary Islands. *T. fabricii* and *T. fornicatus* are typically associated with sand environments. A positive identification of female specimens relies on examination of genital features.

**Tibellus sp. A.** Spiders of the philodromid genus *Tibellus* are small to medium-sized and have an elongated abdomen. The eye arrangement is diagnostic. Their colour and behaviour make them well camouflaged. They typically stretch themselves along grass stems or twigs with legs I and II extended forward, legs IV extended rearward, and legs III often flexed alongside, holding on.

We found *Tibellus* sp. A by night on a vertical twig of a small shrub in Dubai's Creekside Park (Fig. 43.1). This species has a relatively short

abdomen and the captive specimen proved to be a very fast runner. The genus *Tibellus* was not recognized in Logunov's (2011) account of UAE Philodromidae collected by the UAE Insect Project.

#### Other UAE records of Philodromidae

Based on more than 200 specimens of Philodromidae collected by the UAE Insect Project, Logunov (2011) recognised a total of 10 species from the UAE, one of which proved to be new to science. Those are listed in the index. Logunov expressly commented, however, that our current knowledge of the Philodromidae of the UAE (and of the Arabian Peninsula generally) is not satisfactory and that, in his opinion, a conservative estimate of the true philodromid diversity of Arabia would be at least 30 species, including several subgroups so far unrepresented.

#### PHOLCIDAE

**Artema cf. atlanta.** This large Daddy Long-Legs species (Fig. 44.1) is widespread in the Hajar Mountains and the Ru'us al-Jibal, and is one of the most common spiders that we encountered in the mountain wadi environment. It has been found in a variety of habitats, including:

- (1) the roof of small caves or rock shelters;
- (2) sheltered hollows or passages among bedrock outcrops or boulders; and
- (3) on the underside of reverse slopes in bedrock, including over water.

It has also been found on the fringe of rural villages in coastal areas, under discarded furniture and on deteriorating walls and buildings, and may possibly be found in other natural and man-made environments in the UAE, where the authors have not yet encountered it.



Fig. 41.1 *Philodromus* sp. A: An active hunter photographed by night in a mountain front wadi. The eye pattern may cause Philodromidae species to be mistaken for wolf spiders (Lycosidae). (BR)



Fig. 42.1 *Thanatus* sp. A: A female on a gravel terrace in Wadi Sfai. The broad carapace, the eye pattern and the form of the cardiac mark are together diagnostic. Five *Thanatus* species have been recognised from the UAE but the females have been distinguished only by microscopic analysis. (BR)



Fig. 43.1 *Tibellus* sp. A: A male grass runner observed by night on a low shrub in Dubai's Creekside Park. The shape, colour and behaviour of the spider allow it to hunt concealed among grass and twigs. It proved to be a very fast runner. (BR)

Males and females are similar in appearance. The spider normally sits in or near the centre of its web, an irregular three-dimensional tangle (Fig. 44.2). On one occasion, GRF watched a female dash from the shelter of wadi boulders to subdue and wrap an Oriental Hornet *Vespa orientalis* (generally considered a formidable opponent) that had flown into a corner of a large web (Feulner 2014a, where, however, the spider is wrongly identified as *Physocyclus globosus*). The female carries her egg sac in her jaws – a white sphere with individual eggs visible within (Fig. 44.3).

Examination of our photographs and specimens permitted us to make an identification of *A. atlanta* based on body size (approaching 10 mm) and the key in Huber & Warui (2012). Our identification also compares well with the few online photos of *A. atlanta*, whereas alternatives such as *P. globosus* are smaller and more delicate species with less vivid and consistent abdominal markings.

The distribution of *A. atlanta* was given by Huber & Warui (2012) as being from Northern Africa to Central Asia, but the World Spider Catalog (2015) considers it pan-tropical. It has been recorded from Saudi Arabia (Desouky & El-Hennawy 2012, El-Hennawy 2014) and would not be unexpected in the UAE. Two other *Artema*

species (but not yet *A. atlanta*) have been recorded from northern Iran (Zamani *et al.* 2015). Zamani has introduced a note of caution about identification by pointing out that the Iranian *A. doriai* has been found to be more widespread than previously thought (A. Zamani, *pers. comm.*). Huber and Warui (2012) considered *A. atlanta* to be a synanthropic species, but, as noted above, the UAE *Artema* is quite common in natural environments.

**cf. *Crossopriza lyoni*.** This medium-sized pholcid (body length = 4.5 mm) (Figs. 45.1, 45.2) was first encountered on a summer night in rushes and among construction debris at the edge of the salt marsh at Khor Hulaylah, Ra's al-Khaimah. Markings were consistent among several individuals seen. Alejandro Valdez Mondragon (*pers. comm.*) has suggested that our photos probably represent females of *Crossopriza lyoni* (Blackwall 1867), a cosmopolitan tropical and subtropical species common in synanthropic environments, which has also been recorded from Yemen and more recently from Iran, on the island of Hormuz in the Strait of Hormuz (Zamani *pers. comm.*). Subsequently we found males and females of the same spider to be common in and around the abandoned buildings of the old town at Jazirat al-Hamra, Ra's al-Khaimah.





Fig. 44.1 *Artema* cf. *atlanta*: This large daddy long-legs species is one of the most common spiders encountered in the mountain wadi environment of the UAE. (GRF)



Fig. 44.2 The web of *Artema* cf. *atlanta* is an irregular three-dimensional tangle built in caves, hollows or passages among bedrock outcrops or boulders. (GRF)



Fig. 44.3 The female *Artema* cf. *atlanta* carries her spherical egg sac in her jaws. (BR)

***Micropholcus* cf. *fauroti*.** Several individuals of this rather small, pale Daddy Long-Legs (body length = 3 mm, diameter ~15- 20 mm in life) were found by night beneath leaves of large Bougainvillea shrubs on the landscaped grounds of Emirates Towers, Dubai, in an area shaded by taller trees. The abdomen of these spiders is round in dorsal view but in profile it appears truncated, and is pointed in the area of the spinnerets (Fig. 46.1). A number of pholcid genera include leaf-dwelling species in tropical climates (reference is made in general to the work of Bernhard A. Huber). We suspected that this spider is likely to be a widespread species, perhaps one that is spread with horticultural plants, but our identification remains circumstantial.

Amir Weinstein (*pers. comm.*) first suggested that our photo shows a *Micropholcus* sp. We determined that *M. fauroti* is a cosmopolitan species of the tropics and subtropics but had not yet been recorded in Arabia (Huber 2011), although a congener, *M. jacominae*, had been recorded from Yemen (Deeleman-Reinhold & van Harten 2001). Otherwise, the genus is found only in the New World. Subsequently, van Harten (*pers. comm.*) advised that *M. fauroti* had been found to be the most common Pholcidae at Al-Wathba, an effluent-fed wetlands environment on the outskirts of Abu Dhabi island, where it was common in malaise traps during April to June. The Al-Wathba determinations were confirmed by Bernhard Huber.





Fig. 45.1 cf. *Crossopriza lyoni*: This species, shown here in posterior-ventral view, was encountered on a summer night in rushes and among construction debris beside Khor Hulaylah, and later among the abandoned dwellings of the old town at Jazirat al-Hamra. Both sites are in Ra's al-Khaimah. (BR)



Fig. 45.2 cf. *Crossopriza lyoni*: A profile of the same individual shown in Fig. 45.1. (BR)

**cf. *Physocyclus globosus*.** This Daddy Long-Legs species was collected in an empty office in urban Deira, Dubai, where it had made a web in a corner of the ceiling. The specimen shown in Figs. 47.1 and 47.2 is a female still clutching its spherical egg mass in its jaws. The markings indicate that it is *Physocyclus globosus*, a species distributed in warm regions worldwide, especially in association with human habitation. We were not surprised to find this species in the UAE. It has been recorded from neighbouring Iran (Zamani *et al.* 2015) although not yet from Saudi Arabia (El-Hennawy 2014).

#### PISAURIDAE

***Dolomedes* sp. A.** Two individuals of this spider (Fig. 48.1) were encountered by night at the edge of the stream above the permanent waterfall in Wadi Wurayah National Park. One was sitting on a mat of filamentous algae in a shallow puddle, and ran across the puddle when disturbed; the second was under a nearby stone. Generic

identification is based on the configuration of the eyes, the shape of the carapace and the association with water. The ability of the spider to “walk on water” is also consistent with *Dolomedes*. Spiders of the family Pisauridae are sometimes called Nursery Web, Raft or Fishing spiders.

We observed and collected what appeared to be a second *Dolomedes* species by night in the dry, stony wadi bed of upper Wadi Hiluw, a location without permanent water, but ca. 100 metres from a large plantation. Generic identification was based on the same features as mentioned above and the distinctive “trident” mark on the carapace, seen in many *Dolomedes* species.

#### SALTICIDAE

Jumping spiders (Salticidae) comprise one of the largest families of spiders, with some 5,000 named species in more than 500 genera. Most are small but many are nonetheless relatively conspicuous because they are active by day and frequently in motion, moving intermittently in discrete short bursts or hops. All have two large eyes directed forward, giving them excellent binocular vision commensurate with locomotion and prey capture by jumping. Some may appear to be brightly coloured, but even those are usually well-camouflaged in their normal context.

As noted above, Wesolowska & van Harten (2010, 2011) have so far recorded 34 species of Salticidae from the UAE. A number of those species are featured in this catalogue, including photos in their natural environments. The remainder are listed in the index. At least one Salticidae species not previously recorded, *Menemerus* cf. *taeniatus*, is represented in the catalogue as well. Our unpublished records include a number of Salticidae in addition to those discussed here, that we have seen and photographed on only a single occasion and have been unable to identify more specifically.

As in the case of lynx spiders (Oxyopidae), we found many Salticidae to be active by night, although they are generally considered to be diurnal hunters. Again, the best explanation is probably the high daytime temperatures (>38°C / 100°F) that prevail in the UAE for six months of the year.

***Evarcha seyun*.** First described from Yemen, this jumping spider has proven to be widespread in the UAE (Wesolowska & van Harten 2010). We have encountered it in a variety of environments, including dense, landscaped hedges and spindly plants on sand in Mushrif Park, the salt marsh at Khor Hulaylah, and *Acacia tortilis* trees in several mountain wadis. In all of those environments it was active by night in late spring and summer,



Fig. 46.1 *Micropholcus* cf. *fauroti*: These small, pale, leaf-dwelling Daddy Long-Legs were found by night on the underside of Bougainvillea leaves on the landscaped grounds of Emirates Towers, Dubai, in an area shaded by taller trees. *M. fauroti* is also the most common pholcid collected at Al-Wathba wetlands, in Abu Dhabi, by the UAE Insect Project. (BR)



Fig. 47.1 cf. *Physocyclus globosus*: *P. globosus* is a cosmopolitan spider of warm regions, typically associated with human environments, and was expected in the UAE. The preserved female specimen shown here, still carrying her eggs in her jaws, was collected in an empty office in urban Deira, not far from Dubai's bustling creek. (BR)



Fig. 47.2 cf. *Physocyclus globosus*: A profile of the specimen shown in Fig. 47.1. (BR)

following daytime high temperatures exceeding 40°C. A specimen was also collected and given to us by John Martin from Sir Bani Yas Island, offshore of western Abu Dhabi.

Males (Figs. 49.1, 49.2) and females (Fig. 49.3, 49.4) are very differently marked, but each is distinctive enough to permit confident identification by reference to the photographs of preserved specimens in Wesolowoska & van Harten (2010, at Plates 5 and 6).

In Mushrif Park, *E. seyun* was common in the top of the hedges where we found it, and we speculated about what prey species it might be taking. The most conspicuous possible prey was occasional 'sleeping' specimens of the Small Cupid *Chilades parrhasius*, a common UAE polyommata butterfly.





Fig. 48.1 *Dolomedes* sp. A: This probable *Dolomedes* species was found by night beside permanent water above the waterfall in Wadi Wurayah National Park. (BR)



Fig. 49.1 *Evarcha seyun*: A male showing the "bull's eye" pattern on the carapace. (BR)



Fig. 49.2 *Evarcha seyun*: A second male showing ruddy highlights. (BR)



Fig. 49.3 *Evarcha seyun*: A female showing the distinctive dark, circular, posterior mark. (BR)



Fig. 49.4 *Evarcha seyun*: This photograph is believed to show a juvenile female. Compare with Fig. 49.3, noting the different body proportions and the incipient development of the adult colour pattern. (BR)





***Heliophanillus fulgens***. This circum-Mediterranean species was collected at many locations in the Northern Emirates and the Eastern Region of Abu Dhabi by the UAE Insect Project (Wesolowska & van Harten 2010), often but not always in relatively mesic environments or near water. The female is readily identifiable by virtue of her chartreuse-gold colour, including chartreuse palps, with large black eyes, minor black highlights and glossy, pale brown legs (Fig. 50.1). The male is uniformly black (Wesolowska & van Harten 2010, Plate 28). H.G.B. Roberts (online) features an excellent series of images of the the male and female *H. fulgens* taken at the Al-Ain wastewater treatment plant.

We encountered a female *H. fulgens* in somewhat unusual circumstances on the landscaped grounds of Emirates Towers, where we found it apparently sheltering within the diffuse web spun by a female Dictynidae sp. at the base of leaf whorls in the top of the decorative sedge *Cyperus alternifolius*.

***Langona pallida***. This is one of the most recognisable of the UAE's jumping spiders (Figs. 51.1 to 51.3). It was collected by the UAE Insect Project in a variety of habitats, including mountain wadis, coastal lagoons (*khors*), sandy plains and inland wetlands (Wesolowska & van Harten 2010). The authors have encountered it by day among sparse vegetation on saline ground near a drying pool in Wadi Asfani (a/k/a Sifuni, Isfun, Esfani), and also among vegetation on saline ground along canals at Ruwayah plantation.

The male and female differ in appearance, as seen in preserved specimens shown in Wesolowska & van Harten (2010, at Plates 9 to 11). The male, shown in life in Fig. 51.1, has a pair of broad, pale dorso-lateral stripes on the black carapace and a single pale median stripe on the black abdomen. The ends of the male palps are covered in black hair (Fig. 51.2). The female has a pair of broad, pale dorso-lateral stripes on both the carapace and abdomen (Wesolowska & van Harten 2010).

***Menemerus cf. taeniatus***. These spiders (Fig. 52.1) were common on a mid-June morning on the rough and furrowed bark of large ghaf trees (*Prosopis cinerarea*) within the Dubai Desert Conservation Reserve (DDCR). Males and females have identical markings, which can be surprisingly cryptic (Fig. 52.2). We watched one female spider catch and eat a small green inchworm.

We subsequently sought this species out and found it on irrigated ghafs at Ras al-Khor, on the outskirts of Dubai city. Later we found it unexpectedly on buildings and ornamental neem trees at Khor Fakkan, on the Gulf of Oman coast.

Our identification is based on photographs by Walter P. Fleigler, A.G. Florida, Andy Philips, Schäfer and others, posted on [http://www.jumping-spiders.com/php/tax\\_drawings.php?id=2699](http://www.jumping-spiders.com/php/tax_drawings.php?id=2699) (accessed 30 June 2015). Those photos, many of which show *M. taeniatus* on the rough bark of trees, are from the Mediterranean region



Fig. 50.1 *Heliophanillus fulgens*: A preserved female specimen from the grounds of Emirates Towers. This circum-Mediterranean species has been found to be widespread in the UAE. The chartreuse female is unmistakable. The male is black. (BR)





Fig. 51.1 *Langona pallida*: Dorsal view of the male. (BR)



Fig. 51.2 *Langona pallida*: A close-up of the male, showing the dark-fronted palps. (BR)



Fig. 51.3 The *Langona pallida* male may be conspicuous in some field contexts. (GRF)



Fig. 52.1 *Menemerus* cf. *taeniatus*: Dorsal view of a male on an ornamental neem tree at Khor Fakkan. (BR)

(Mallorca, Sardinia and Greece) but the range of the species extends to Iran (Zamani *et al.* 2015) and Kazakhstan (World Spider Catalog 2015). Wesolowska & van Harten (2010, 2011) recognised two other species of *Menemerus*, *M. affinis* and *M. marginatus*, from different environments in the UAE.

***Pellenes hedjazensis*.** This species (Fig. 53.1) resembles a honey-and-white version of the black-and-white *Langona pallida*. Previously known only from Saudi Arabia, Wesolowska and van Harten (2010) confirmed it for the UAE as well. The UAE Insect Project collected it repeatedly at a single site north of Ajman, but otherwise collected only a single specimen, in Wadi Siji. All collections were in the warmer months. We found a single male in mid-June on a small shrub of the spreading *Limeum arabicum* within the Dubai Desert Conservation Reserve, in a hollow among rolling sand dunes in the northern part of the reserve. Captive in a plastic container, the spider made a small silken shield in a corner, behind which it retreated.

***Plexippus paykulli*.** This species has a cosmopolitan range in tropical and subtropical regions, where it is often common in synanthropic environments, including buildings. Wesolowska and van Harten (2010) were the first to confirm its presence in the UAE, where it is similarly common. It makes oval silken retreats in corners of walls and windows, crevices in walls and tree trunks, etc. The bold, white-striped markings typical of most *P. paykulli* (Fig. 54.1) can be interrupted and may give way almost entirely in favor of more cryptic coloration (Figs 54.2 and 54.3).

***Pseudicius fayda*.** This is another species described as new to science in *Arthropod Fauna of the UAE*, vol. 3, based on a specimen collected at Ain Al-Faydhah in Al-Ain (Wesolowska & van Harten 2010). We found the spider in Mushrif Park, Dubai, hunting by night among the leaves of a *ghaf* tree (*Prosopis cineraria*) on vegetated sand dunes (Fig. 55.1). Our identification is based on the distinctive dorsal markings on the distal abdomen, illustrated in Wesolowska & van Harten (2010, at Fig. 61). Coincidentally,





Fig. 52.2 *Menemerus* cf. *taeniatus*: Oblique view of a male on a ghaf tree at Dubai Desert Conservation Reserve, demonstrating its cryptic colouration. (GRF)

Wesolowska & van Harten also identified as new to science a congener, *Pseudicius mushrif*, from a specimen collected at Mushrif Park. Eight different species of *Pseudicius* have been recorded from Iran (Zamani *et al.* 2015), but none of those has yet been recognised in the UAE.

***Rafalus arabicus*.** The UAE Insect Project collected four species of *Rafalus* in the UAE, of which three were new to science; the male of the fourth species was also previously undescribed (Wesolowska & van Harten 2010). *R. arabicus*, one of the newly described species, is found primarily in mountain regions, where it is relatively common. It may prove to be endemic to the mountains of the UAE and Northern



Fig. 53.1 *Pellenes hedjazicus*: Antero-dorsal view of a male *in vitro*. (GRF)

Oman, but it could yet be recognised in the southern Zagros Mountains of Iran as well.

Small, relatively nondescript reddish-brown or greyish-brown jumping spiders of this general sort are conspicuous in the mountain environment because they are among the few non-flying arthropod species seen in open sunlight on rocks or soil in the heat of the day. (The Pitted Beetle *Adesmia cancellata* is another exception.) Close inspection of a sampling of such jumping spiders in the field and review of current and historical photographs indicates that most of them are *R. arabicus*.

The patterns on the carapace and abdomen of the female permit a reasonably confident identification (compare Figs. 56.1 and 56.2 with Wesolowska & van Harten 2010, Plate 21). Slight colour differences are probably related to the different colours of the immediate mountain environment – reddish-brown bedrock in the Hajar Mountains generally and greyish-brown in the Musandam region – as well as ambient lighting conditions. The male *R. arabicus* is relatively colourful and even more distinctive, characterised by, *inter alia*, robust but bare, yellow-orange femurs on legs I and II (Fig. 56.3, 56.4).

Much more rarely, we have seen jumping spiders with similar habits that seem to be something other than *R. arabicus* (Fig. 56.5).

***Thyene imperialis*.** This spider ranges from eastern Africa to southern Asia (Wesolowska & van Harten 2010) and is common in the UAE. The male (Fig. 57.1) and female (Fig. 57.2) are differently marked and somewhat variable, but both are distinctive. It was collected by the UAE Insect Project at a variety of locations in the Northern Emirates and the Eastern Region of Abu Dhabi, normally in relatively mesic environments including wadis, dams, and agricultural and landscaped properties, but excluding sand deserts.

Although jumping spiders are generally active by day, we once found a female by night in the top of a *Euphorbia larica* shrub in the Hajar Mountain foothills, feeding on an African Babul Blue butterfly *Azonus jesus* (Fig 57.3). We speculate that the spider had caught the butterfly soon after the latter had settled on the plant to rest for the night, and was still finishing its meal when we arrived on the scene.

In another instance we noticed that a *T. imperialis* male, hunting by day, was able to maneuver without impediment on a large shrub of the nettle *Forsskaolea tenacissima*, the so-called “velcro plant”, whose clinging leaf surfaces caught and held at least a couple of large bluebottle flies and the UAE’s honeybee, *Apis florea*.



Fig. 54.1 *Plexippus paykulli*: A common species of warm regions globally, often found in and around buildings. This male, on a neem tree at Khor Fakkan, shows the most typical and distinctive colouration – white stripes on a black background. (BR)



Fig. 54.2 A male *Plexippus paykulli* on a ghaf tree at Dubai's Creekside Park, displaying a cryptic variation of the normal colouration. (BR)

**Salticidae gen. sp. A.** The jumping spider shown in Figs. 58.1 to 58.3 (the “Jebel Fayah Jumper”) was very common on rocky and stony ground at the north end of the ridge of Jebel Fayah when we visited late on a summer afternoon, but we have been unable to identify it with greater specificity. Our photographs of this species illustrate one of the difficulties of amateur identification of spiders using gross visual features: a comparison between living animals and preserved specimens may be very difficult. In this instance, we were unable to take suitable photographs of these very active and cryptically-coloured spiders in life. Our photos of “dry”

specimens show the true field colour of the animals (Figs. 58.1, 58.2), but the “wet” specimens (specimens in liquid preservative, or photographed within about ten minutes of removal from preservative) appear very different – much less hirsute and with many dark areas not seen in life, especially in the frontal region of the carapace (Fig. 58.3).

A tentative photo identification by Dr. Wanda Wesolowska of a similar looking spider from Jebel Hafit, depicted in H.G.B. Roberts (online), suggests that this spider could be *Evarcha praeclara*.



Fig. 54.3 A female *Plexippus paykulli* at Madinat Jumeirah, displaying an alternative cryptic pattern. (BR)



Fig. 55.1 *Pseudicius fayda* hunting by night in a ghaf tree at Mushrif Park, Dubai. The distinctive dorsal abdominal markings are illustrated in Wesolowska & van Harten (2010). This species is so far known only from the UAE. (BR)



Fig. 56.1 A female *Rafalus arabicus* in Wadi Wurayah National Park. When first examined in 2010, this species was determined to be new to science, but it is one of the most common non-flying arthropods seen by day in the Hajar Mountains. (GRF)



Fig. 56.2 A second female *Rafalus arabicus* from Sal Dhayah in the western Ru'us al-Jibal. (GRF)



Fig. 56.3 A male *Rafalus arabicus* showing its prominent bare, yellow-orange femurs on legs I and II, and its black-and-white palps. (GRF)



Fig. 56.4 A close-up view of a second male *Rafalus arabicus*. (BR)



Fig. 56.5 A diurnal, rock-hopping salticid female photographed in Wadi Lakayyam in the south-eastern Ru'us al-Jibal. It appears to be something other than the common *Rafalus arabicus*. (GRF)





Fig. 57.1 A male *Thyene imperialis* at Khor Fakkan. The orange colouration on this individual is unusually vivid. Note also the robust, pincer-like appearance of the forelegs. (BR)



Fig. 57.2 A female *Thyene imperialis* on a lime tree in Jimi Oasis. (BR)



Fig. 57.3 A female *Thyene imperialis* feeding on an African Babul Blue butterfly *Azonus jesous* by night in a shrub in the Hajar Mountain foothills. (BR)





Fig. 58.1 Salticidae gen. sp. A: This still-identified salticid species, represented here by a “dry” preserved female specimen, was common on stony ground in the late afternoon shade of Jebel Fayah on a summer afternoon. (BR)



Fig. 58.2 Salticidae gen. sp. A: A second individual of the species shown in Fig. 58.1, also from Jebel Fayah and also a preserved female specimen in “dry” condition. (BR)



Fig. 58.3 Salticidae gen. sp. A: The specimen shown in Fig. 58.2 is shown here “wet”, i.e., still damp from immersion in liquid preservative. It looks quite different from the live spiders or the “dry” specimen, especially the colouration and texture of the cephalothorax, demonstrating one of the many potential difficulties of field or macroscopic identification of spiders from preserved specimens. (BR)

**Salticidae gen. sp. B.** The jumping spider shown in Fig. 59.1 remains unidentified but is worthy of mention because we have encountered it in two relatively mesic, landscaped environments: (i) atop a low hedge in Mushrif Park, Dubai, along with many *Evarcha seyun* and a small number of other spiders; and (ii) on a Bougainvillea shrub on the grounds of Emirates Towers, in an area shaded by large trees.

We gave this spider the field name “Orange Swirl”, for its pale ground colour and many arcuate and longitudinal lines and bands of orange colour, which are consistent among individuals from the two sites. The individual shown appears to be a male but may be immature, as the colour of the slightly expanded palps is undifferentiated.

The pale colouration and orange markings do not match any of the plates or descriptions in Wesolowska & van Harten (2010, 2011), nor have we succeeded in finding a close match among published images, although this spider bears an obvious resemblance to Salticidae sp. C, discussed below.

**Salticidae gen. sp. C.** The jumping spider shown in Fig. 60.1 apparently a female, was found on the windshield of a vehicle parked beside the





Fig. 59.1 Salticidae gen. sp. B: An unidentified male(?) salticid, a morph dubbed the “Orange Swirl Jumper”, found by night on Bougainvillea leaves on the landscaped grounds of Emirates Towers, Dubai. (BR)



Fig. 60.1 Salticidae gen. sp. C: A female salticid, a morph nicknamed “Freckles”, found by day on a vehicle windshield beside the mangrove forest at Khor Zawra. Note the resemblance to Salticidae gen. sp. B (Fig. 59.1). (GRF)

mangrove forest at Khor Zawra, Ajman. We gave this spider the field name “Freckles”, for its pale ground colour and many small, irregular, orange dots.

Its colouration and shape suggest that it is closely related to Salticidae sp. B (“Orange Swirl”), discussed above, although there appears to be no tendency in Salticidae sp. C for the orange dots to coalesce into the lines or blotches seen in Salticidae sp. B. A constant feature of the two is the paired orange lines on the dorsal carapace and the orange lines passing at a slight diagonal under the posterior lateral eyes. One possibility is that they represent congeneric species; another is that they represent male and female of the same species, with either or both of the pictured specimens being immature.



Fig. 61.1 Salticidae gen. sp. D: A female salticid found on reeds near the old roadhead in Wadi Wurayah, Fujairah. Pending identification, it has been given the field name “Rorschach Jumper” for the paired ink-blot markings on its abdomen. (BR)

**Salticidae gen. sp. D.** Fig. 61.1 shows a female jumping spider photographed on tall reeds at the base of the gorge at the old roadhead in Wadi Wurayah. Pending identification, we have given it the field name “Rorschach Jumper” for the paired ink-blot markings on its abdomen, but despite its distinctive appearance we have been unsuccessful in making a more definitive identification. The abdominal markings at first recall those of *Pellenes geniculata*, recorded from the UAE (Wesolowska & van Harten 2010), but the physical proportions of the spider are obviously different.

**Salticidae gen. sp. E.** The all-black male salticid (“Black Jumper”) shown in Figs. 62.1 and 62.2 was photographed by day on the margin of a field of alfalfa (lucerne) in a plantation at Lahbab (Al-Hibab) on the Dubai-Sharjah border.

**Salticidae gen. sp. F.** The female(?) salticid shown in Fig. 63.1 was seen near dawn on the grounds of the Madinat Jumeirah Resort, Dubai. Pending identification, we have dubbed it the “Cross-Stripe Jumper” because it exhibits a bold pattern of black-and-white stripes aligned in perpendicular directions on the carapace and abdomen of the spider. It is apparently widespread, at least in mesic environments. Photographic records have been sent to us from suburban Dubai (P. Olliff, *pers. comm.*) and a restaurant overlooking the Eastern Mangroves of Abu Dhabi (T. Carlisle, *pers. comm.*), and we observed several individuals in a plantation at Mirbah, on the Gulf of Oman Coast, where two specimens showed medial gaps in the posterior black stripes on the abdomen.



Fig. 62.1 Salticidae gen. sp. E: An all-black male salticid found by day on the margin of a field of alfalfa (lucerne) at Lahbab (Al-Hibab) on the Dubai-Sharjah border. (BR)



Fig. 62.2 Salticidae gen. sp. E: A frontal view of the all-black male salticid shown in Fig. 62.1. (BR)

#### SCYTODIDAE

**Scytodes cf. thoracica.** We have encountered this nocturnal spider on three occasions, twice in Wadi Wurayah National Park and once at Jebel Fayah. Initially we observed and photographed it in mid-evening, in a recess in a low gravel wall along a tributary wadi in WWNP (Fig. 64.1), in an area where the Giant Daddy Long-Legs *Artema* cf. *atlanta* was common in similar habitats. In fact, we did not distinguish it from *A. atlanta* in the field, but only upon review of our photos. Months later we found a second individual at a nearby location, when we overturned a rock on a gravel terrace by day. A third individual was recognised by night on the rocky slopes of Jebel Fayah, an outlying mountainous ridge surrounded by sand desert.

The round, domed carapace is characteristic of the family Scytodidae, or “spitting spiders”. Spitting spiders attack their prey by projecting a spray composed of glue, silk and venom, which cements the prey to the substrate, before closing in for a fatal bite (Jones 1983). The spray is produced by enlarged venom and silk glands in the domed carapace and is said to be effective at distances up to 1-2 cm.

We were unsuccessful in collecting any of the observed specimens, with the result that our knowledge of the species in question currently depends primarily on our photographs of the first individual (Fig. 64.1). Those are suggestive of the widespread *Scytodes thoracica*, which has a cosmopolitan range excluding only extreme northerly regions. Comparison with published images shows that the markings on the carapace of the UAE spider display all the elements of typical *S. thoracica*, although the UAE specimen is most consistent with the minority of images showing a relatively narrow heart-shaped pattern in the centre and relatively large diagonal

blotches laterally (Google Images – “*Scytodes thoracica*”). Conversely, the carapace markings do not match what has been illustrated for several other *Scytodes* species known from the Arabian region, namely *S. arwa*, *S. bilqis* and *S. makeda* (Rheims *et al.* 2006, Zamani 2014).

Caution has been expressed, however, that the UAE *Scytodes* species is larger than typical *S. thoracica* (S. Huber, *pers. comm.*). That judgment is consistent with our initial conflation of our own first record with the large pholcid *Artema* cf. *atlanta* (body length ca. 10mm). It is a further argument for caution that the genus *Scytodes* is an unusually large one, with more than 220 recognised species.

*S. thoracica* is one of six *Scytodes* species recorded from Iran, but mostly from the north (Zamani 2014). Zamani has suggested that, if our estimate of body length (ca. 8mm) is correct, the spider in our photo is most likely to be either a very pale specimen of *S. makeda* or an undescribed species (A. Zamani, *pers. comm.*). *S. makeda* has been recorded from Yemen, Oman and the island of Hormuz. It is the largest of the *Scytodes* species known from Arabia, but it is also normally rather dark in colour (Rheims *et al.* 2006, Zamani 2014).

**Scytodes sp. A.** This very dark-coloured *Scytodes*, recognisable by its domed carapace, was photographed along the Abu Dhabi shoreline (Fig. 65.1), where it created the impression of an ant-mimic (R.J. Hornby, *pers. comm.*).

#### SICARIIDAE

**Loxosceles cf. rufescens.** A single specimen of a spider believed to be *Loxosceles rufescens* was collected by Antonius van Harten at his home in suburban Sharjah, UAE (A. van Harten, *pers.*



Fig. 63.1 Salticidae gen. sp. F: A female(?) salticid from the grounds of the Madinat Jumeirah Resort, Dubai. This species exhibits a bold pattern of black-and-white stripes aligned in perpendicular directions on the carapace and abdomen of the spider. (BR)



Fig. 64.1 *Scytodes* cf. *thoracica*: A dorsal view of this UAE 'spitting spider' (family Scytodidae) hanging in a rudimentary web by night. (BR)

*comm.*). van Harten is acquainted with *L. rufescens* from the Cape Verde Islands and Yemen, but cautions that expert confirmation should ideally be sought.

*L. rufescens* is native to the circum-Mediterranean region and has been recorded in countries neighbouring the UAE (Desouky & El-Hennawy 2012, Zamani *et al.* 2015), but it has also been introduced worldwide. In Iran, it has been collected on several islands in the Strait of Hormuz as well as the city of Shiraz. Fig 66.1 shows a specimen photographed in France by Sylvain Déjean, published in Oger (online) at [http://arachno.piwigo.com/picture/?8600/category/520-loxosceles\\_rufescens](http://arachno.piwigo.com/picture/?8600/category/520-loxosceles_rufescens).

The common name Violin Spider derives from the appearance of a dark mark on the carapace. *L. rufescens* is nocturnal and may hunt actively but also constructs a web of sticky silk to entrap prey. It can be found in both natural environments and buildings. The bite of *L. rufescens* is generally considered poisonous to humans; the bite of other species of *Loxosceles* is associated with tissue necrosis.

#### SPARASSIDAE

Two genera of Sparassidae or huntsman spiders found in Arabia have recently been comprehensively revised: *Cebrennus* by Jäger

(2004, 2014) and *Eusparassus* by Moradmand & Jäger (2012) and Moradmand (2013). A third Arabian genus, the monospecific *Cercetius*, has been synonymised with *Eusparassus* (Moradmand 2013). Our account below of at least seven (and probably eight) sparassid species found to be present in the UAE depends in large part on the foregoing studies and on the assistance of Majid Moradmand. The above references indicate that most *Cebrennus* and *Eusparassus* species have non-overlapping ranges, so the presence of multiple congeners of each within the small area of the UAE (Moradmand 2014, Figs. 70, 72) is testimony to the increasingly evident status of the country as a biogeographic meeting place.

*Cebrennus* is a genus of largely sand desert-dwelling Sparassidae, sometimes called "sand doweling spiders" because they excavate vertical, finger-sized, silk-lined burrows in the sand. Suspected *Cebrennus* species, and burrows of this sort, can be found across most of the UAE's sand deserts, from Ra's al-Khaimah and Sharjah in the northeast to the dunes of Liwa and Abu Dhabi's Western Region in the southwest (Fig. 67.1). Their burrows, or the remains of burrows (often a cast of the burrow supported by the silk lining) (Fig. 67.2), are seen more often than the spiders.



Fig. 65.1 A dark spitting spider (family Scytodidae), probably another *Scytodes* species, photographed by day near the shoreline of Abu Dhabi. The domed carapace is characteristic of Scytodidae and accommodates the glands that produce the sticky, poisonous silk. (Photo by Richard J. Hornby)



Fig. 66.1 *Loxosceles cf. rufescens*: A spider believed to be *L. rufescens* was collected in a suburban Sharjah residence (van Harten, pers. comm.). *L. rufescens* is native to the circum-Mediterranean region but has been introduced worldwide. Its bite is considered poisonous to humans. The figure shows a specimen from France, photographed by Sylvain Déjean and published in Oger (online). (See text for details.)



Fig. 67.1 The finger-sized vertical burrow of a sand dowering spider, probably *Cebrennus* sp. A, at Bu Asibah, in Abu Dhabi's Western Region. (GRF)



Fig. 67.2 The cast of a burrow believed to be the sand dowering spider, *Cebrennus* sp. A, from East Liwa. (GRF)

The common name "stone huntsman" has been applied to the genus *Eusparassus*, which consists of approximately 50 relatively large species distributed in arid or semi-arid habitats around the Mediterranean, southward throughout Africa and eastward to Central Asia, primarily in rocky or stony habitats.

Among other things, *Cebrennus* species are distinguishable from *Eusparassus* species by the pattern of their eyes. In both species the eyes are arrayed in two more or less straight lines. In *Eusparassus*, all eight eyes are essentially equal in size. In *Cebrennus*, the anterior median eyes (bottom row, centre) are noticeably larger than all the other eyes.

***Cebrennus cf. castaneitarsis*.** A large sparassid with an eye pattern consistent with *Cebrennus* has been recorded by various observers on sand and fine gravel substrates at locations across the UAE, including: Ruwais, along the coast of western Abu Dhabi (Fig. 68.1); Al Wathba camel racetrack; Abu Dhabi's eastern desert; Saih as-Sidirah, near Abu Dhabi's border with Dubai (Fig. 68.2); the Arabian Ranches housing complex in Dubai; the Dubai Desert Conservation Reserve (DDCR); and Sharjah Desert Park. This is thought to be the spider responsible for most of the sand-doweling burrows observed in desert areas.

We observed these spiders in summer 2015 at DDCR, hunting in the few hours before dawn on vegetated flats dominated by *Heliotropium kotschy* (Fig. 68.3). They were typically found on a low mound of sand but in the vicinity of a small shrub, motionless, backed up against a straggling branch or small stem, facing outward over open sand with their rear protected by the obstacle (Fig. 68.4). Finding them was facilitated by the fact that their anterior median eyes reflect a flashlight beam with a reddish light, but apparently only in a narrow range directly in front



Fig. 68.1 *Cebrennus* cf. *castaneitarsis*: A female at Ruwais, near the coastline in western Abu Dhabi. (Photo by Drew Gardner)



Fig. 68.2 *Cebrennus* cf. *castaneitarsis*: A male at Saih as-Sidirah, near Abu Dhabi's border with Dubai. (Photo by Tommy Pedersen)



Fig. 68.3 *Cebrennus* cf. *castaneitarsis* was found at DDCR on these vegetated flats. (GRF)



Fig. 68.4 *Cebrennus* cf. *castaneitarsis*: A male at DDCR, showing the characteristic hunting posture, with the spider backed against an obstacle. (BR)



Fig. 68.5 Peter Roosenschoon carefully excavates a suspected burrow of *Cebrennus* cf. *castaneitarsis* at DDCR. The occupant proved to be a small juvenile. (GRF)



of the spider. Several large females were collected for expert taxonomic investigation, but all of them proved to be sexually immature (M. Moradmand, *pers. comm.*).

By day in the same area we observed several burrows and burrow casts, and we excavated one burrow to expose a juvenile (Fig. 68.5), confirming that this is the spider making the burrows.

Earlier, in January 2015 we had collected a mature male of what appears to be the same species (Fig. 68.6) from mixed sand and fine gravel substrate beside a disused vehicle track in the Hajar Mountain foothills near Kadra, Ra's al-Khaimah. That record extended the confirmed range of the spider and permitted a provisional taxonomic determination as *Cebrennus* cf. *castaneitarsis* (M. Moradmand, *pers. comm.*), a species known to range across North Africa and into the Holy Land (Jäger 2014) and said by G. Levy to live on small plants (Jäger 2000), but the UAE species may yet prove to be new to science because it differs in some important traits from *C. castaneitarsis* (M. Moradmand, *pers. comm.*).

The Kadra male was of equal interest because it indicated that this spider may be a 'trap-door' species. Fig. 68.7 shows the crescent entrance of a trap door under leg RIII, and Fig. 68.8 shows a second, but possibly abandoned trap-door just ahead of the spider, at ca. 11 o'clock. Jäger (2014) discusses and depicts the use of a trap-door burrow by the Moroccan species *Cebrennus rechenbergi*, based on the detailed field observations of Ingo Rechenberg (who first reported, *inter alia*, its exceptional *flic-flac* or cartwheeling escape behaviour). Photographs in Jäger (2014) (at Figs. 135-140) illustrate how the Moroccan *Cebrennus*, *C. rechenbergi*, re-enters its sand burrow by slipping sideways through a semi-circular slit in the silken lid, using its trailing hind leg to scatter sand as camouflage. The UAE's *C. cf. castaneitarsis* bears a closer morphological resemblance to *C. rechenbergi*, than to *Cebrennus* sp. B (discussed below), having its carapace nearly equal in size to its abdomen, and its abdomen more ovoid than spherical.

We are aware of only a single reported observation of actual trapdoor hunting behaviour by (presumptively) this spider. Wildlife filmmaker Yusuf Thakur was filming nocturnal geckos in the desert north of Jebel Fayah. At one point, as a small gecko he was watching ran across the sand, a medium to large spider emerged "from nowhere" and ran ca. 40 centimetres towards the gecko's path, then stopped and returned, apparently disappearing in the sand. A brief search revealed no trace of it (Y. Thakur, *pers. comm.*).



Fig. 68.6 *Cebrennus* cf. *castaneitarsis*: A male photographed in a mountain front wadi. The eye pattern is typical of *Cebrennus*. (BR)



Fig. 68.7 *Cebrennus* cf. *castaneitarsis*: This photograph of the individual shown in Fig. 68.6 shows the crescent opening of a trap-door under the spider's right third leg (RIII). (BR)



Fig. 68.8 *Cebrennus* cf. *castaneitarsis*: In this dorsal view of the spider shown in Figs. 68.6 and 68.7, a second, possibly abandoned, trap-door can be seen in front of the spider at 11 o'clock. (BR)

Several photographic records from sandy substrates show what appears to be a paler version of *C. cf. castaneitarsis* (Figs. 68.9, 68.10). However, the observed colour difference could possibly be the result of factors such as immaturity, the colour of the sandy substrate, and/or the photographic conditions. We found at DDCR that our photographs taken with flash



Fig. 68.9 *Cebrennus* cf. *castaneitarsis*: A very pale specimen photographed by day at DDCR. (Photo by Peter Alexander Roosenschoon)



Fig. 68.10 *Cebrennus* cf. *castaneitarsis*: Another very pale specimen photographed by day in the eastern desert of Abu Dhabi. (Photo by Richard J. Hornby)

regularly recorded these spiders as more colourful than our eyes perceived them, and it seems imprudent to multiply the already large number of UAE sparassids without more compelling evidence.

***Cebrennus* sp. B.** This spider has so far been observed only in the Dubai Desert Conservation Reserve (DDCR). There it is abundant in sand and gravel flats dominated (naturally) by the bristly *Heliotropium kotschyi*, but which are today irrigated by drip irrigation to promote the growth of several local tree species. The principal

associated plants include the tall sedge *Cyperus conglomeratus*, the spreading *Limeum arabicum* and the erect *Dipterygium glaucum*, all more or less common natives of the local inland sand deserts.

In the course of about an hour by night we observed and photographed a dozen or so spiders, all of them hunting in *Dipterygium glaucum* and all of them female (Fig. 69.1). When disturbed, they would typically flee first to the distal end of a branch. In a few instances they retreated to the base of the shrub, but they never attempted to flee across the surrounding sand.

Nevertheless, they excavate vertical tube burrows in the sand, where they shelter by day. An hour or so after dawn we observed a number of burrows, both open and closed, in the area where we had seen spiders by night (Fig. 69.2). Open burrows were unoccupied and typically very short (<40 mm); they appeared to not to have been completed. Closed burrows we took to be occupied, and Peter Roosenschoon demonstrated this by gently excavating a couple of burrows to expose the spider residents, each at a depth of about 10 cm. The burrows made by *Cebrennus* sp. B, and the silken tubes within them, are smaller than the similar tubes and burrow casts known from deep sand deserts across the UAE, indicating that two separate species are involved.

Our genus identification of *Cebrennus* sp. B is based on the eye pattern and on the physical similarity to the Tunisian *Cebrennus villosus*, depicted in Jäger (2014), including the sub-spherical abdomen much larger than the carapace. The presence of one or more *Cebrennus* species in the UAE is significant for current knowledge of the biogeography of this genus. The UAE is flanked by records of two poorly known *Cebrennus* species, both considered to be related to *C. villosus* (Jäger 2014). *C. intermedius* has been described from Dhahran, Saudi Arabia, on the Arabian Gulf, but the female is unknown. To the south, *C. mayri* has been described from Ras al-Hadd, Oman, but no male specimen is known.

Several specimens of *Cebrennus* sp. B were collected for expert taxonomic examination, but all of them proved to be sexually immature (M. Moradmand, *pers. comm.*).

***Eusparassus arabicus*.** This medium-sized huntsman spider has recently been distinguished from *E. walckenaeri* (Moradmand 2013). Its range encompasses northern Saudi Arabia and the UAE, where in 1964 it was collected in Dubai from barasti huts in the area of present day Jumeira (Moradmand 2013). No other UAE records are known and no photos from life were available to us at the time this paper was first



Fig. 69.1 *Cebrennus* sp. B: A female hunting by night in a shrub of *Dipterygium glaucum* at Dubai Desert Conservation Reserve. (BR)



Fig. 69.2 Burrows of *Cebrennus* sp. B. The two adjacent open burrows at the bottom appear to have been left incomplete. The small crater at the center of the photo is a closed burrow, probably with a spider inside. At the top is a collapsed open burrow. (GRF)



Fig. 70.1 A suspected individual of *Eusparassus arabicus* from Sir Bani Yas Island. (Photo by Laura Thubron)

submitted. A suspected population at Ruwayah plantation proved to be *Olios* cf. *iranii* (discussed below). However, a potential candidate spider has since been photographed on Sir Bani Yas Island, offshore of western Abu Dhabi (Fig. 70.1) (L. Thubron, pers. comm.) and is being investigated.

***Eusparassus laevatus*.** This medium to large huntsman spider (to ca. 7cm diameter in live posture) has been recorded at a number of locations and a range of habitats within the Hajar Mountains. Individual spiders have been observed on gravel terraces in Wadi Sfai and at Wadi Wurayah National Park headquarters. In upper Wadi Hiluw we found several individuals on the wadi bank beside a large plantation. However, we found *E. laevatus* to be especially common in two disparate environments worth mentioning in more detail.

One was among the thick reeds (*Arundo donax*) in the gorge above the permanent waterfall in Wadi Wurayah National Park, where *E. laevatus* climbs and hunts by night in the same manner as *E. arabicus* on *Phragmites australis* reeds at Ruwayah plantation, described above. *E. laevatus* has also been photographed above the waterfall by day, hanging in a shrub of lavender to feed on a large caterpillar of the Striped Hawkmoth *Hyles livornica* (Fig. 71.1, 71.2).

The second place where *E. laevatus* proved to be common was on a long, two-metre high, stone wall supporting





terraced fields along mid-Wadi Shawkah (Fig. 71.3). The wall is composed of loosely fitted wadi cobbles, and, although faced by cement to a greater or lesser degree in many places, the cobbles evidently provide a preferred environment, probably because they offer enhanced opportunities for shelter and perhaps a greater abundance of insect prey attracted by the relatively mesic environment of the adjacent plantation.

There we learned that *E. laevatus* is not simply an earthbound or arboreal predator. We watched one individual leap up ca. 5 cm from the upper tier of stones in an attempt to catch a flying insect. That attempt was probably unsuccessful, because a few seconds later the same individual made a more ambitious effort, leaping forward from the wall above us and falling to the silty ground some two metres below, where we could see that it had prey in its jaws. Our flashlight beams may have helped to attract flying insects to within the spider's reach, but after a moment on the ground it retreated back to the wall and out of our lights before we could investigate more closely or take a photograph.

At the same site one night, we watched a captive female *E. laevatus* in a plastic collecting jar undertake a systematic cleaning of the tarsal claws on four of her legs, three on the left and one on the right. In turn, she brought the tip of each leg to her mouth and groomed it with her jaws and the opposite palp.

*E. laevatus* in the UAE is identifiable in the field by its distinctive pattern of dark markings on the tawny carapace (Fig. 71.1, 71.3). Moradmam (2013) indicates that this is true throughout its range from Eastern Arabia to the Afar region of Africa. However, El-Hennawy (2014) has identified as *E. laevatus* a sparassid from Al-Baha in south-western Saudi Arabia, with an unmarked carapace, on the basis of the female genital anatomy, which he depicts (see his Figs. 12-14); El-Hennawy's specimen resembles our Fig. 70.1, which we have speculated may be the elusive *E. arabicus*.

In all other UAE sparassids the carapace is essentially unmarked. As mentioned above, the markings on the ventral abdomen are diagnostic in several *Eusparassus* species, but both *E. arabicus* and *E. laevatus* have unmarked abdomens (Fig. 71.2). *E. laevatus* is also distinguishable from the other UAE/Oman *Eusparassus* species by its rust-coloured and generally slightly hairy jaws, and by the absence of any distinctive black banding at its leg joints.

***Eusparassus perezii*.** This large huntsman spider was originally described from a specimen taken by the Portuguese Bonnier-Perez Arabian Coastal expedition in 1901. The collection site was labeled as "Golfe Persique: Dibba" but most likely indicates the port town of Dibba on the Gulf of Oman coast at the UAE/Oman border, just south of the Musandam Peninsula, at the entrance to



Fig. 71.1 *Eusparassus laevatus* feeding on a caterpillar of the Striped Hawkmoth *Hyles livornica*. The distinctive dark markings on the carapace are conspicuous. (GRF)



Fig. 71.2 *Eusparassus laevatus*: A view of the same spider, showing the unmarked ventral abdomen. (GRF)





Fig. 71.3 *Eusparassus laevatus* by night on a stone wall at a traditional plantation in Wadi Shawkah. These spiders sometimes leap from their perch to catch flying insects. (GRF)

the Strait of Hormuz. Other museum collections exist from Sweihan, inland from Abu Dhabi Island, and from central, eastern and southern Oman, including the Wahiba Sands (Moradmand 2013).

The Sweihan and Wahiba Sands records are from sand desert environments and several of the other Oman collection sites are labeled as sand or sand desert. From this it is at least reasonable to consider that *E. perezii* is less a creature of the mountain environments of Northern Oman than of sands and coastal plains.

The authors have not personally encountered *E. perezii*, but we have viewed images of an



Fig. 72.1 This photo from Khor Kalba shows a female sparassid that is probably *Eusparassus perezii*, first collected from Dibba in 1901. (Photo by Sithum Jayasinghe)

otherwise unidentified Sparassidae species, found at Khor Kalba on the East Coast of the UAE and photographed, independently, by Sithum Jayasinghe (Fig. 72.1) and Siegfried Huber (*pers. comm.*). The sooty carapace with a vivid white margin is a good match for the specimen of *E. perezii* illustrated from life in Moradmand (2013) (at Fig. 57a, from Somaliland), although the elongated dagger marking on the dorsal abdomen of the Khor Kalba photo is not suggested in Moradmand's illustration. The dark banding on the legs is reminiscent of *E. xerxes* (see Fig. 73.4) but shows prominently on the dorsal as well as the ventral surfaces.

From this we hypothesise that the Khor Kalba photos represent the otherwise "missing" *E. perezii*, first collected some 70 kilometers to the north along the same coast. The alternative is to postulate an additional UAE sparassid in an already crowded field. The proprietor of a tea shop at Kalba port, a native of Kerala, told us that large spiders resembling sparassids had once been common in the neighbourhood of the port (indoors and out), but were no longer so, which he attributed to the use of insecticide strips and sprays.

The same correspondents who reported and photographed *E. xerxes* from Ras al-Hadd, Oman (see below), have also reported seeing similar spiders, but "less hairy and 'heavy'", in the area of Fins, between Muscat and Ras al-Hadd (A. Davidson, *pers. comm.*). Those reports could possibly relate to *E. perezii*.

[NB: *E. perezii* was treated as *Cercetius perezii* by Moradmand (2013), who nevertheless concluded that the monotypic genus *Cercetius* is synonymous with *Eusparassus* as defined by Moradmand & Jager (2012). A formal change in nomenclature awaited a decision by the ICZN on a petition to retain the widely used genus name *Eusparassus* in preference to *Cercetius*, which was the senior synonym (Moradmand 2013). The name *E. perezii* is now recognised as valid in World Spider Catalog 2015.]

***Eusparassus xerxes*.** This large hunting spider (Fig. 73.1) is widespread but infrequently encountered in gravel wadi and terrace environments in the Hajar Mountains of the UAE and northern Oman. It was informally dubbed the "Wadi Lion" by GRF for its large size and tawny colour. By day, we have three times found it sheltering in small hollows in vertical wadi walls composed of thick gravel deposits (Fig. 73.2) and once in a silken pouch under a stone on a gravel terrace (Fig. 73.3). Photographic records of the same spider have been reported to us on several occasions from 2013 to 2015 from a beach in the Ras al-Hadd area of Oman, the easternmost point of the

Arabian Peninsula (Andy Whitaker and Adam Davidson, *pers. comm.*) (Figs. 73.5, 73.6). All records are from spring and summer, but they are few in number and could reflect observer bias.

The arrangement of the eyes, coupled with its general morphology, made it possible to identify the Wadi Lion as a member of the Sparassidae. Photos published in print and online indicated that it belongs to the genus *Eusparassus*, but efforts to identify it to the species level were inconclusive (Feulner 2014a, 2014b, 2014c) until we became aware of Moradmand & Jäger (2012) and Moradmand (2013).

The diagnostic bell or vase-shaped dark marking on the ventral abdomen (Fig. 73.4) confirms the identification of the Wadi Lion as *E. xerxes*, in accordance with the criteria of Moradmand (2013). In addition, our specimen of *E. xerxes* shows several other features that can potentially also be used to distinguish it from similar UAE sparassids: its pale tan face with a thin, black 'moustache' (versus an unmarked face in *E. laevatus* and a black face in *Olios* cf. *iranii*); its hairy, pale tan upper jaws (chelicerae) (versus hairy, reddish-brown in *E. laevatus* and glossy dark brown in *O. cf. iranii*); and a single black band proximal to the first joint (the 'knee') on all legs (versus un-banded 'knees' in *E. laevatus* and both proximal and distal 'knee' bands in *O. cf. iranii*). The leg bands are not evident in a dorsal view (Fig. 73.1), but are conspicuous in the ventral view of the same individual as a captive specimen (Fig. 73.4).

***Olios* cf. *iranii*.** We have found this medium-sized huntsman spider (Fig. 74.1, 74.2) at two sites on the outskirts of modern Dubai, in each case among reeds (*Phragmites australis*) growing along drainage channels. It is common at the venerable Ruwayah plantations and less common at the Dubai Pivot Fields, a popular birdwatching venue. A recent online photographic record also exists from a Dubai residence at an unspecified location (<http://britishexpats.com/forum/middle-east-60/huntsman-spiders-dubai-718896/page2/>).

We had initially believed this species to be *Eusparassus arabicus*, but specimens sent to Majid Moradmand resulted in the unexpected diagnosis of *Olios*, possibly *O. iranii*, a species originally recognised from India and Pakistan and more recently from Iran (Moradmand *et al.* 2015). (It is worth mentioning that the specific epithet "*iranii*" refers not to Iran, but to the Eastern District of Poona in India, also known (in 1901) as "Irani". The area is within the modern Indian state of Maharashtra, whose capital city is Mumbai.)

By night, *O. cf. iranii* climbs and hunts among

the reeds, typically at ca. 0.5-1.75 metres above the ground. It was a surprise to us to learn that these spiders will launch themselves into the air, if necessary, to capture small flying insects that pass by, falling to the ground with (or without) their prey. Their tawny forms can be spotted with the naked eye, but they are easiest to find by reflection from a flashlight beam; their eyes reflect light in a narrow cone around the axis of incoming light.

In the reed habitats where we have seen it, *O. cf. iranii* closely resembles *E. laevatus* (discussed above) in the reeds at the Wadi Wurayah waterfall, in both appearance and behaviour. However, the carapace of *O. cf. iranii* is always unmarked dorsally, and when viewed frontally its face and jaws (chelicerae) are seen to be black, not pale or reddish-brown (Fig. 74.3). In addition, in our experience *O. cf. iranii* is somewhat smaller than *E. laevatus*; the adult diameter of ca. 5-6 cm (in live positions) makes it the smallest of the UAE sparassids. The markings on the ventral abdomen are diagnostic in several *Eusparassus* species, but *E. arabicus*, *E. laevatus* and *O. cf. iranii* all have unmarked ventral abdomens (Moradmand & Jäger 2012, Moradmand 2013) (Fig. 71.2). In both *E. laevatus* and *O. cf. iranii*, the ventral abdomen can sometimes be observed in the field when the spider is climbing among reeds.

One further characteristic that may permit discrimination of *O. cf. iranii* is the presence of two dark bands (versus one or none) flanking the first joint of each of the legs. However, we found that the leg bands were not nearly as conspicuous in the field by night (or in our photos) as they appear in a specimen in hand.

**Sparassidae gen. sp. C.** This species was originally known to us only from a male specimen collected in a pitfall trap at the Dubai Desert Conservation Reserve and curated by Peter Roosenschoon (Fig. 75.1). At a late stage in our investigations another male was collected by night on a sand flat in DDCR near irrigated shrubs (Figs. 75.2, 75.3). This spider appears to be a sparassid, but it does not match any others we have encountered. The large anterior median eyes exclude *Eusparassus*, while the eye pattern and abundant, long, erect hairs on the legs differ from both *Cebrennus* species described above, as do details of the male palps. The presence of an eighth species of Sparassidae within the UAE is surprising.

#### TETRAGNATHIDAE

***Tetragnatha* cf. *extensa*.** The relatively large, long-jawed spiders shown in Figs. 76.1 to 76.8 are typically found in sub-horizontal orb-webs built over water and stretched among fringing



Fig. 73.1 *Eusparassus xerxes*, the “Wadi Lion”, on a wadi wall of cemented gravel. This immature female had already lost two of her right legs when we encountered her. A moulted exoskeleton is seen at the upper left. (GRF)



Fig. 73.2 *Eusparassus xerxes* sheltering by day in a hollow in a wadi wall made of cemented gravel. (GRF)



Fig. 73.3 The silken retreat of *Eusparassus xerxes* beneath an overturned stone on a gravel terrace near Masafi. (GRF)



Fig. 73.4 A captive specimen of *Eusparassus xerxes*, showing the diagnostic bell or vase-shaped dark marking on the ventral surface of the abdomen. (GRF)



Fig. 73.5 *Eusparassus xerxes*, “the biggest spider I have ever seen in the wild” (Andy Whitaker, *pers. comm.*), photographed near Ras al-Hadd, Oman. (Photo by Adam Davidson)



Fig. 73.6 A frontal view of the same spider shown in Fig. 73.5, showing the facial features and the dark bands on the underside of the legs. A view of the underside of the abdomen would have absolutely confirmed the identification. (Photo by Adam Davidson)





Fig. 74.1 *Olios* cf. *iranii*: A female hunting in reeds at Ruwayah plantation. Compare the unmarked carapace with the markings of *E. laevatus*, shown in Figs. 71.1 and 71.3. (BR)



Fig. 74.2 *Olios* cf. *iranii*: A male hunting in reeds at Ruwayah plantation. The enlarged male palps and longer legs distinguish it from the female shown in Fig. 74.1. (BR)



Fig. 74.3 The black face and jaws of *Olios* cf. *iranii* distinguish it from other UAE sparassids. (BR)

vegetation. Spiders of this sort were relatively common at pools in UAE wadis during the wet 1990s. In the winter season, at least, they are active diurnally and can be found in their webs through late afternoon. If disturbed in their webs, they retreat to a blade of grass or the stem of a rush or sedge, where they wait, elongated and motionless, relying on camouflage and mimicry for protection. If they happen to fall into the water, they can make a quick but inelegant exit by paddling furiously across the surface.

Tetragnathidae are sexually dimorphic. Male spiders (Fig. 76.6) are somewhat smaller and thinner than females, but they have even longer and more splayed jaws, which are used to hold the female's jaws as a precaution during copulation.

The tetragnathids seen in the UAE are varied in colouration and pattern, and most of them appear to fall within the range of variation attributed to the widespread but polymorphic Holarctic species, *Tetragnatha extensa*. This includes all of the spiders shown in Figs. 76.1 to 76.8, for which *T. extensa* seems to be a somewhat better match than other widespread (and similar) species such as *T. montana* or *T. nigrita*. (It seems evident, however, that not all online identifications can be relied on equally, so this judgment includes an element of subjectivity.)

We were initially tempted to distinguish the spider shown in Figs. 76.7 and 76.8, which was found in a mangrove habitat. However, we find that its ventral pattern (Fig. 76.7) is very similar to that of Fig. 76.1 from Wadi Wurayah waterfall, and the dorsal pattern resembles a faded version of what is seen in Fig. 76.4 from Wadi Hayl, where the different dorsal pattern shown in Fig. 76.5 was seen contemporaneously. The brown male in Fig. 76.6 was also photographed in Wadi Hayl on the same occasion, providing a convincing demonstration of the variability of these spiders.

We cannot, however, exclude the possibility that more than one species of *Tetragnatha* are represented in the UAE and in our photographs. Figs. 76.1 to 76.3 appear to show relatively robust, vividly coloured individuals, whereas the other photos show somewhat paler, more delicate ones. There is no consistent difference in the environments in which they were found. The question can be finally resolved only by dedicated collection and expert examination.

#### THERIDIIDAE

The family Theridiidae includes what are commonly called cobweb or comb-footed spiders. They typically build an irregular and untidy looking three-dimensional web of diffuse, woolly silk threads. A specialised 'comb' of fine



Fig. 75.1 Sparassidae gen. sp. C was originally known only from this pinned specimen of a male collected in a pitfall trap and curated by Peter Roosenschoon at the Dubai Desert Conservation Reserve. (BR)



Fig. 75.2 Sparassidae gen. sp. C: Dorsal view of a male, probably immature, collected by Peter Roosenschoon at night in DDCR on a sand flat near irrigated shrubs. (BR)



Fig. 75.3 Sparassidae gen. sp. C: Close-up frontal view of the male specimen shown in Fig. 75.2, showing the arrangement of the eyes. (BR)

bristles found on the last segment of leg IV is used to comb out the silken threads of the web as they are extruded.

Theridiidae present the same problems of identification as Araneidae. The family is very large (>2,200 species) and many theridiid taxa are morphologically similar, while individual species are often variable in colour and pattern. Even seemingly well-known species such as the potentially dangerous “Widow” spiders of the genus *Latrodectus* have been the subject of taxonomic contention and at least one species found in the UAE remains under study.

A more definitive treatment of UAE Theridiidae is anticipated, based on collections by the UAE Insect Project (Knoflach & van Harten, *in prep.*), and is expected to include at least 14 species (A. van Harten, *pers. comm.*). Among those is known to be *Theridion jordanense*, which was collected at several UAE sites (Thaler-Knoflach & El-Hennawy 2012). Two *Latrodectus* species have previously been recorded from the UAE, but other *Latrodectus* species are present in the region (Knoflach & van Harten 2002, Zamani *et al.* 2014) and it is not unreasonable to expect that they may be found in the UAE as well.





Fig. 76.1 *Tetragnatha* cf. *extensa*: Ventral view of a female from Wadi Wurayah waterfall, Fujairah, UAE. (BR)



Fig. 76.2 *Tetragnatha* cf. *extensa*: Dorsal view of a female from Wadi Wurayah waterfall, Fujairah, UAE. (BR)



Fig. 76.3 *Tetragnatha* cf. *extensa*: Profile of a female from Wadi al-Khudhra, Wilayat Mahdhah, Oman. (BR)



Fig. 76.4 *Tetragnatha* cf. *extensa*: Dorsal view of a female from Wadi Hayl, Fujairah. (GRF)



Fig. 76.5 *Tetragnatha* cf. *extensa*: Dorsal view of a second female from Wadi Hayl, Fujairah, photographed contemporaneously with Fig. 76.4. (GRF)



Fig. 76.6 *Tetragnatha* cf. *extensa*: Ventral view of a male from Wadi Hayl, Fujairah, photographed contemporaneously with Figs. 76.4 and 76.5. (GRF)





**Argyrodes sp. A.** The tiny, long-legged spider shown in Fig. 77.1 was found in a large shrub of *Capparis cartilagenia* on the lower slopes of Jebel Qatar, Wilayat Mahdhah, Oman, in the area known to UAE and Omani naturalists as the Hanging Gardens. For a long time we presumed it to be a small Daddy Long-Legs (Pholcidae) but further investigation indicates that it is more likely a species of the Theridiidae genus *Argyrodes*. The common name Silver Spider reflects the meaning of the genus name.

*Argyrodes* species are small, long-legged spiders, many of which have a more or less subtriangular abdomen, including some with the tooth-like shape seen in Fig. 77.1. They are able to spin webs of their own but are more often found in the webs of other, larger spiders. There they may feed on tiny insects disregarded by the host but they may also steal food that would otherwise be eaten by the host (kleptoparasitism). The intruders are generally ignored themselves, apparently due to their small size and stealthy movement.

The spider in Fig. 77.1 appears to be in its own small web and to have moulted very recently from the shed skin hanging below it.

***Latrodectus cf. cinctus*.** The genus *Latrodectus* comprises the so-called Widow spiders. Representatives are found in the warm and dry regions of all continents, including a number of

species with a reputation for painful and medically significant bites. The taxonomy of this genus has long been contentious.

There is no question that the elongated red marking on the abdomen of UAE Redback females, an elongated accordion shape (Fig. 78.1), resembles the typical pattern of the well-known Australian and South-east Asian species, *L. hasselti*. Recent studies, however, have distinguished very similar specimens from southern Iran, including the shores of the Strait of Hormuz, as *L. cinctus* (Zamani *et al.* 2014), a species otherwise known from most of Africa, the Cape Verde Islands and Kuwait. For that reason we have adopted *L. cf. cinctus* as an indicative designation for the Redback species found in the UAE.

Both *L. cinctus* and *L. hasselti* may sometimes display colour patterns very different from the typical "Redback" pattern (Zamani *et al.* 2014, Nieuwenhuys 2015), especially when immature, but in the UAE we have encountered only typical adults. The Redback male is much smaller and less conspicuous than the female, and has proportionately much longer legs (Fig. 78.2); it also makes a rudimentary web. Immature males may be relatively colourful (Fig. 78.3).

Whatever their exact identity or origin, Redbacks have been resident in the UAE for a long time, and stories abound. For example, a tolerant and curious Dubai Natural History Group



Fig. 76.7 *Tetragnatha cf. extensa*: Ventral view of a female in its orb-web on the fringe of mangroves at Khor Hulaylah. (BR)



Fig. 76.8 *Tetragnatha cf. extensa*: Dorsal view of the spider shown in Fig. 76.7 after it fled to a mangrove leaf. (BR)





Fig. 77.1 *Argyrodes* sp. A: The small spiders of this genus are often found in the webs of other, larger spiders, where they may feed on tiny insects disregarded by the host, but they may also steal food. The spider in this figure appears to have moulted very recently from the shed skin hanging below it. (GRF)

member once watched a Redback female build and maintain a nest in the top of a storage closet in her suburban home in Jumeira. She did not become concerned until a crop of dozens of juvenile spiders hatched. At that point her scruples evaporated and she sprayed the nest with pesticide, only to watch in distress as the youngsters immediately parachuted to safety *en masse*, on silken threads.

In the UAE, the Redback has been observed most often in synanthropic habitats such as suburban gardens and peripheral domestic environments, where people are more likely to encounter it. However, Redbacks and their nests and spherical egg sacs (Fig. 73.1) are widespread and not uncommon in natural environments throughout the country. We have found them in diverse wild settings, e.g., within the mountains in Wadi Baqarah (a/k/a Bagarah), at a site littered with evidence of ancient copper-mining; along the shores of the lake behind the Rufaysah Dam in Wadi Shi, Khor Fakkan; in the crotch of a tree beside a rough vehicle track in Wadi Shawkah; among the ruins of an abandoned field wall in Wadi Hiluw; and up obscure tributaries within Wadi Wurayah National Park. At the other extreme, we have seen a Redback and its web at the base of concrete barriers flanking a major highway skirting Dubai's Burj Khalifa district, with high speed traffic passing less than two metres away.

An untidy web close to the ground is typical of the Redback (Figs. 78.4, 78.5). The spider itself is normally reclusive by day, but by night we once found an adult female suspended in the open in a low web among rocks fallen from the crumbling wall of a long-abandoned field. Because they are specialised to prey on ground beetles, most of

which have very hard exoskeletons, the Redback is armed with especially powerful jaws. Those allow it to pierce not only beetle exoskeletons but also human flesh, and inject venom deeply. It is this quality, as much as the potency of their venom, that makes Redbacks potentially dangerous to humans. The carcasses of ground beetles can often be found on the periphery of Redback nests.

At a site on the East Coast adjacent to a popular recreation area, we found a community of redbacks living among low stone field walls, now disused, including more than a dozen nests, most with 3-4 egg sacs, within a triangular area having dimensions of ca. 15 metres (Fig. 78.6). There BR took the opportunity to seek out and collect a couple of Redback males on the periphery of female nests, including the colourful male shown in Fig. 78.3. The Redbacks in that community seemed to be feeding primarily on black ants, whose clustered exoskeletons were found near several spider nests.

***Latrodectus dahli*.** *Latrodectus dahli* is found throughout the Near East and Central Asia, including the whole of Iran (Zamani *et al.* 2014), but it is considered an uncommon spider (Jäger & Gromov 2011). *L. dahli* has been collected from diverse environments in Umm al-Qaiwain, Sharjah and Fujairah (Jäger & Gromov 2011) and an unpublished record exists from a Dubai site under development in the early 2000s (Y. Khalili, *pers. comm.*, citing P. Hillyard, *in litt.*). At least three of the four sites are synanthropic.

*L. dahli* is generally said to be an all-black spider (i.e., with no coloured markings), but while that is normally true for the adult female, immature *L. dahli* typically display a more colourful pattern of abdominal stripes (Knoflach & van Harten 2002, at Figs. 9-14). Fig. 79.1 shows an adult female *L. dahli* from Socotra Island, photographed by Buday Ádám (<http://www.sirbuday.hu/blog/?p=3791>). Figs. 79.2 and 79.3 show a female *Latrodectus* found by night among saltbushes on waste ground along the UAE coast north-east of Ajman. This most likely represents an immature female *L. dahli*; among other things, the white ventral hourglass shape is considered characteristic (Knoflach & van Harten 2002, Zamani *et al.* 2014). However, it is not possible to exclude entirely the possibility of a congener, *L. geometricus*.

*L. geometricus* has a pan-tropical distribution and is considered common in Arabia (Knoflach & van Harten 2002). It is also found in Iran, where it lives in both urban and steppe environments (Zamani *et al.* 2014). It has not previously been recorded from the UAE, but given its known distribution it should eventually



Fig. 78.1 A female UAE Redback *Latrodectus cf. cinctus*, showing the red marking on the abdomen typical of UAE specimens and the spherical egg cases, which are normally closely guarded by the female spider. (GRF)



Fig 78.2 A male Redback near Wadi Wurayah waterfall. (BR)



Fig. 78.3 A very colourful male Redback, possibly a juvenile, from the Gulf of Oman site depicted in Fig. 78.6. (GRF)



Fig. 78.4 A Redback nest at the base of a small boulder. (GRF)



Fig. 78.5 A Redback nest in a hollow near the base of a tree. (GRF)





Fig. 78.6 At this Gulf of Oman site, a community of Redback spiders was found living among the low stone walls on waste ground adjacent to a local recreational area. (GRF)

be found here. Immature *L. dahli* and *L. geometricus* are similar in appearance, although the adults normally grow up to be a more or less uniform black in the former and patterned brown in the latter. However, *L. geometricus* typically has an orange-red ventral hourglass marking at all stages, versus a white marking in *L. dahli* (Knoflach & van Harten 2002, Zamani *et al.* 2014). Intriguingly, a recent photograph taken at an unspecified location in Dubai and forwarded to us by Dr. Jacky Judas, appears to show the underside of a dull brown *Latrodectus* with an orange-red hourglass (Fig. 79.3), which could be *L. geometricus*.

***Steatoda cf. maura*.** Webs of this attractive female spider (Fig. 80.1) were observed low in the crowns of large trees (the sidr tree *Ziziphus spina-christi* and the ghaf tree *Prosopis cineraria*) in a remote and moderately steep Hajar Mountain wadi at an elevation of ca. 700 metres, in late October 2014.

The webs were constructed around the distal twigs of interior branches and consisted of a broad, low chamber with a more or less flat, horizontal floor and a retreat at the proximal end sheltered by the incorporation of leaves from the host tree (Fig. 80.2). Approximately a dozen

webs were observed within two trees, although as many as half may have been unoccupied.

The specimen we collected is relatively large (total length >8mm) and the eye pattern permitted identification to family. The colouration of the dorsal abdomen recalls the pale form of *Steatoda nobilis*, the largest of the so-called false widows, which is well-known from Western Europe and western North Africa, where it is considered to have been introduced from the Canary Islands and Madeira (World Spider Catalog 2015, Natural History Museum). Compare, e.g. the images in Oger (online), Petot (online), and Natural History Museum (online).

A better candidate exists, however, in the form of *S. maura*, another large *Steatoda*, recorded from semi-arid environments in the circum-Mediterranean region (Levy & Amitai 1982) and Iran (Zamani *et al.* 2015). The distinctive dorsal abdominal markings are a good match in detail for what is illustrated in Levy & Amitai (1982) for male and immature female *S. maura*, and the ventral markings are a reasonable match. Zamani (*pers. comm.*) has confirmed that the abdominal pattern is the same as what he has observed for *S. maura* in Tehran. The web-building habits of the UAE spider are nevertheless different from what is reported by



Fig. 79.1 *Latrodectus dahli* has been recorded from diverse but generally synanthropic environments in the Northern Emirates. The adult female specimen shown was photographed on Socotra Island by Buday Ádám (see text for details).



Fig. 79.2 A female *Latrodectus*, probably *L. dahli*, photographed by night among saltbushes on the coast north-east of Ajman. The vivid colouration suggests that this is an immature specimen. (BR)



Fig. 79.3 *Latrodectus* cf. *dahli*: Dorsal view of the specimen shown in Fig. 79.2, *in vitro*. (GRF)



Fig. 79.4 This photograph, taken at an unspecified location in Dubai, appears to show a brown *Latrodectus* female with an orange-red ventral hourglass pattern that could be *L. geometricus*, a globally widespread species but one not yet formally recorded from the UAE. (Photo courtesy of Jacky Judas)

Levy & Amitai. They write of *S. maura* that it constructs “a white, characteristic *Steatoda*-type web with a very distinct, central ceiling sector, supported on silken ‘pillars’. The web is usually spun under overhanging rock shelves and on low bushes, but not under stones.”

The bite of many species of *Steatoda* is generally considered to be mildly venomous, although not so much so as in *Latrodectus* species.

***Steatoda* cf. *triangulosa*.** This spider is distinguished by its glossy, reddish brown, globular abdomen, sometimes marked with darker patches (Fig. 81.1). We have recorded it in two mountain wadi environments: in late summer on a gravel wadi wall in a tributary of Wadi Wurayah, and in winter between low rocks in the wadi bed of upper Wadi Hiluw. In each case its web was very simple, consisting of only a few strands of silk.

From our photographs, Dr. Helena Prokopenka suggested the provisional generic identification as *Steatoda*, which is supported by reference to many online resources (e.g., Oger online, Petot online, Natural History Museum). Our photos show the principal elements common to the dorsal abdominal colour pattern of *S. triangulosa*, featuring a medial row of broad, white-spotted diamond shapes, although the flanking red-brown dorso-lateral stripes are suppressed and interrupted. Alireza Zamani (*pers. comm.*) concurs that Fig. 81.1 resembles pale *S. triangulosa* as seen in Iran.

*S. triangulosa* is well-known as a house spider in Europe and North America. As noted above, the bite of many *Steatoda* species is considered to be mildly venomous, but there are said to be no known cases of envenomation by *S. triangulosa*.



Fig. 80.1 An immature female *Steatoda* cf. *maura* in her web in a large *sidr* tree (*Ziziphus spina-christi*) in a steep Hajar Mountain wadi. (BR)



Fig. 80.2 The web of *Steatoda* cf. *maura* is constructed around the distal twigs of interior branches and includes a retreat at the proximal end, sheltered by the incorporation of leaves from the host tree. (GRF)



Fig. 81.1 *Steatoda* cf. *triangulosa*: Dorsal view of a female in Wadi Wurayah National Park. (BR)

**Theridiidae gen. sp. A.** We found this spider (Fig. 82.1) only once, by night in Mushrif Park, Dubai, in a diffuse horizontal web without a shelter. Its abdominal markings – two broad, pale, accordion-shaped dorso-lateral stripes – made us consider the possibility of a Linphyiid spider of the genus *Neriene*, but examination of the specimen and Fig. 82.1 shows the comb of bristles on the distal segment of leg IV that characterises Theridiidae. A second photo of the same female (82.2) shows dramatically how lighting can change the apparent colouration of a specimen.

#### THOMISIDAE

The Thomisidae or crab spiders are a large family (2,000-3,000 species) and identification of individual species is correspondingly difficult. Most are ambush hunters that rely on camouflage and/or mimicry. In the UAE, crab spiders, especially of the genus *Thomisus* and related genera (flower crab spiders), have been a favourite subject of nature photographers over the years, because they often adopt the bright colours of the flowers beside which they perch in deadly wait for prey. Many crab spiders take prey much larger than themselves, which they subdue with their potent venom.

***Thomisus* cf. *spectabilis*.** The white female crab spider shown in Fig. 83.1 was found unexpectedly on a rocky ridge in the southern Musandam Peninsula, on a small, milk white, discarded plastic laban (yoghurt) container. The trapezoidal body and two-horned head suggest the genus *Thomisus* and the white colouration, modest black postero-lateral abdominal spots, pattern of lateral grooves and dorsal dimples, and orange colouration of the tarsi (distal leg segments) make it a good match for the widespread Asian/Australian *T. spectabilis*. Although typically white in colour, *T. spectabilis* can also reportedly achieve pink and yellow hues. A probable example of the latter is shown in Fig. 83.2, photographed only a few kilometres away the following spring, at higher elevation. The male of *T. spectabilis* is much smaller, somewhat differently shaped, and typically coloured dull orange (Whyte & Anderson).

***Thomisus* cf. *onustus*.** Figs. 84.1 and 84.2 show a flower crab spider that we have encountered in a variety of natural environments – trees and shrubs in mountain wadis near Hatta and Shawkah, reeds in a falaj within the plantations





Fig. 82.1 Theridiidae gen. sp. A: A female in a diffuse horizontal web in Dubai's Mushrif Park. This photo shows, under magnification, the comb of bristles on the last segment of leg IV, which is characteristic of Theridiids. (BR)



Fig. 82.2 A study in contrasts: This photo shows the same individual female theridiid as in Fig. 82.1, but the flash and exposure make the spider's colouration look entirely different. (BR)



Fig. 83.1 A female flower crab spider in the Ru'us al-Jibal (the mountains of the Musandam Peninsula) showing the white colour, trapezoidal body, black dorso-lateral spots and two-horned head typical of the widespread *T. spectabilis*. (GRF)



Fig. 83.2 A pale yellow flower crab spider from the Ru'us al-Jibal, also similar to *T. spectabilis*. (GRF)



Fig. 84.1 *Thomisus* cf. *onustus*: The authors found the flower crab spider shown here to be the most common UAE crab spider in natural environments. Its appearance is consistent with the widespread Palearctic *Thomisus onustus*. (BR)



Fig. 84.2 *Thomisus* cf. *onustus*: A postero-dorsal view of the spider shown in Fig. 84.1. (BR)





Fig. 84.3 *Thomisus* cf. *onustus*: A white individual with an orange 'face', from a wadi near Hatta. (BR)



Fig. 84.4 *Thomisus* cf. *onustus*: A juvenile spider feeding on a fly within a *Euphorbia larica* shrub in the mountains near Shawkah. (BR)

at Ruwayah, and *Euphorbia larica* shrubs on rolling sands at the base of the outlying ridge of Jebel Fayah. The genus *Thomisus* is indicated by both the two horned head and the tetrahedral shape of the abdomen. The blunt eye tubercles (the 'horns'), the flattened dorsal surface of the abdomen and its two prominent but knobbed and unmarked dorso-lateral protuberances confirm the resemblance to this spider to *T. onustus*, a widespread Palaearctic species that favors dry climates and extends to tropical regions.

Where we have seen it, the spider has almost invariably had a pale green carapace and legs and a pale yellow abdomen, with the dorso-lateral protuberances being slightly paler. *T. onustus*, however, is notorious for its ability to change colour, from yellow, to white to pink or purple, including mottled white-and-lavender patterns. We have encountered only a single white coloured specimen (Fig. 84.3)

Small spiders showing the typical pale green and yellow colouration and the same knobbed morphology, presumably juveniles, were observed in *E. larica* shrubs in January 2015 in Wadi Daynah (Fig. 84.4) and in rolling sand at Jebel Fayah, where they were common, with up to three spiders in each large shrub. In several instances at both mountain and sandy sites we observed matted silk webbing at the ends of associated *E. larica* branches, raising the possibility that these were the remains of nursery webs.

Fig. 84.5 shows a damaged adult female believed to be the same species, photographed in mid-autumn 2014 in a large *Euphorbia larica* shrub along the mountain front. She had lost her first and second legs on the left side, perhaps in an unsuccessful ambush of a larger prey species. The small silken shelter in the fork of the branch beside her could be the nest for her eggs.



Fig. 84.5 *Thomisus* cf. *onustus*: This adult female in a *Euphorbia larica* shrub has lost her first and second legs on the left side, perhaps in an unsuccessful ambush of a larger prey species. The small silken shelter in the fork of the branch beside her is probably the nest for her eggs. She is considered likely to represent the same species as the several preceding figures, but lacks the conspicuous orange 'face' and displays a pale, notched rectangular marking on the carapace. (GRF)

The individual in Fig. 84.5 differs superficially from the others illustrated here in two obvious ways. Firstly, it displays a pale, notched rectangular marking on the carapace, but similar markings can be seen in a number of published images of *T. onustus*. More strikingly, the conspicuous orange-coloured 'face', seen in Fig. 84.1 and most other individuals we encountered, both adult and juvenile, is absent in Fig. 84.5. The significance of this feature is uncertain. Online





Fig. 85.1 *Tmarus* sp. A: A crab spider that mimics the thorns of *Acacia tortilis* and *Ziziphus spina-christi* trees. In this photo on an *Acacia*, the dorsal "thorn" is pendant and fully extended. (Photo by David Gallacher)



Fig. 85.2 *Tmarus* sp. A: This spider on a *Ziziphus* tree has trimmed its "thorn" to match its immediate surroundings. (BR)



Fig. 85.3 *Tmarus* sp. A: A gross view illustrating the effectiveness of the thorn mimicry. The spider is to the left of centre of the photo, on the left side of the branch, just above a pair of straight thorns. (GRF)



Fig. 85.4 *Tmarus* sp. A: A view of the spider away from its customary environment. (Photo by David Gallacher)



Fig. 85.5 *Tmarus* sp. A: This spider was disturbed while 'sleeping' suspended on a horizontal thread of silk. It retreated to an *Acacia* stem, still carrying the remains of an orange ant, probably caught some time before. (BR)



Fig. 86.1 *Xysticus* sp. A: This ground-dwelling female is guarding her brood chamber, attached to a boulder. (BR)





Fig. 87.1 *Xysticus* sp. B: This bark-dwelling female was observed by night in a hollow in a *Ziziphus* tree. (GRF)



Fig. 88.1 Thomisidae gen. sp. A: The species shown here, known to the authors by the field name "Pumpkin Crab", has been recorded on vegetation at two widespread Hajar Mountain sites.



Fig. 89.1 *Uloborus* cf. *plumipes* suspended in its web built in a rock crevice, showing the asymmetrical, pyramid-shaped abdomen and elongated front legs. The dark patches near the bare tips of the forelegs are characteristic tufts of stiff hairs, which gives these spiders their common name, "Feather-legged Spiders". The black item between the forelegs appears to be the remains of a prey item, perhaps an ant. (GRF)



Fig. 89.2 The spider shown in Fig. 89.1, well camouflaged on the rock face adjacent to the web. (GRF)

images, to the extent that they may be relied on, indicate that *T. onustus* and at least two other congeneric species, *T. arabicus* and *T. bidentatus*, may sometimes exhibit the conspicuous orange-faced colour pattern.

***Tmarus* sp. A.** (Thorn Mimic). Spiders of the genus *Tmarus* are mostly very small and they are masters of camouflage, using not only colour but also shape and behaviour. Like most Thomisidae, they are ambush hunters.

The *Tmarus* species found in the UAE mimics a small thorn. Its body length is only ca. 5-6mm. The abdomen is humped and bears a flexible protuberance that, when extended or pendant, resembles a straight, sharp thorn nearly 2.5mm long (Fig. 85.1). When bent or flaccid, it resembles a broken or blunt, curved thorn (Fig. 85.2). By day, the spider lays pressed flat against a branch or stem with its two pairs of long forelegs pointed forward and the shorter hindlegs brought up alongside the body. In this posture it would pass unnoticed by all but the most focused observers (Fig. 85.3).

We have found no close match among published images, including Google images for *Tmarus stellio*, recorded from Iran (Zamani *et al.* 2015), where *T. horvathi* and *T. piochardi* are also now recognised (A. Zamani, *pers. comm.*).

The UAE *Tmarus* is common in both *Acacia tortilis* (*samr*) and *Ziziphus spina-christi* (*sidr*) trees in wadis along the west flank of the Hajar Mountains, even in winter months (early January). It is probably also common on the gravel plains to the west of the mountains, where *Acacia tortilis* dominates the landscape. Finding our first *Tmarus* was a reminder that the existence of this species had been called to the attention of GRF in 2006 by Prof. David Gallacher of American University of Sharjah,





Fig. 89.3 A partial orb-web, built by a *Uloborus cf. plumipes* in the hanging branch of a ghaf tree (*Prosopis cineraria*) in Mushrif Park, Dubai. The spider is at the bottom of the web, the centre of the radial structure. (GRF)



Fig. 89.4 Dorsal view of the builder and proprietor of the web shown in Fig. 89.3, a female *Uloborus cf. plumipes*. (BR)

who was conducting ecological studies in the Sharjah hinterland. His excellent photographs are reproduced here as *Figs. 85.1* and *85.4*.

It is easiest to find this spider by searching at night in larger *Acacia* and *Ziziphus* trees, where it sleeps while clinging to the middle of a single strand of silk, stretched horizontally between two distal branches. That arrangement undoubtedly offers protection from arboreal predators, but it also facilitates finding the spiders by flashlight in the dark, although their small size still makes it easy to dismiss them as a bit of debris. One of the spiders we found in this way was still clutching its last prey, an orange ant whose dangling abdomen made the ensemble somewhat more conspicuous. When disturbed in this posture, the spider retreated to a branch, taking the ant with it, as shown in *Fig. 85.5*.

The possibility should be mentioned that, although they are very similar in appearance and habits, the *Tmarus* spiders found in UAE *Acacia* and *Ziziphus* trees, respectively, could represent two different species. Both tree species have extensive ranges throughout Arabia and beyond. Impressionistically, we felt that specimens found in *Ziziphus* trees were somewhat larger, and had a larger and taller “thorn”, but our photographs and specimens also show many similarities in detail.

***Xysticus* spp. A and B.** The genus *Xysticus* includes more than 370, mostly drab, species of crab spiders that live on the ground or under bark. We encountered only two females, one guarding her brood chamber by night on a rock beside a

shallow wadi adjacent to Wadi Wurayah National Park headquarters (*Fig. 86.1*); the other by night in a hollow of a *sidr* tree (*Ziziphus spina-christi*) beside a plantation in upper Wadi Hiluw (*Fig. 87.1*).

**Thomisidae gen. sp. A.** We found this distinctively coloured crab spider, featuring an orange abdomen, dark brown carapace and rust-coloured legs (*Fig. 88.1*), on vegetation in two rather different locations in late autumn 2014 and winter 2015 – atop a small, barren shrub in a “wet” wadi on the southern edge of the Ru’us al-Jibal range (the mountains of the Musandam peninsula), and in a large *Acacia tortilis* tree in a wadi on the west flank of the Hajar Mountains near Shawkah. For convenience we refer to it as the “Pumpkin Crab” spider.

#### ULOBORIDAE

***Uloborus cf. plumipes.*** The family Uloboridae comprises more than 250 species in about 18 genera, distributed worldwide. These spiders build orb-webs but are distinct from the orb-web family Areneidae. They are among the few spiders that lack venom glands. *Uloborus* species have very long front legs. The tips of the forelegs are bare and are preceded at their base by a distinctive tuft or comb of long, stiff hairs which gives the genus its common name, “Featherlegged Spiders”.

The spider depicted in *Fig. 89.1* was photographed more than a decade ago in the challenging crevice ascent of the west flank of the Jebel Qatar plateau, overlooking Fossil Valley



in Wilayat Mahdhah, Oman. When disturbed in its web, the spider retreated to the adjacent rock wall, where it was well camouflaged (Fig. 89.2).

More recently we found what appears to be the same *Uloborus* species by night in Mushrif Park, where it had constructed a partial orb-web in the angle of a hanging branch of a ghaf tree (Figs. 89.3, 89.4).

*U. plumipes* is the most widespread species in the genus, being found throughout the Old World. Although it is evidently variable in appearance, published images of *U. plumipes* are generally a good match for the UAE species, particularly the two-humped, sub-pyramidal abdomen, whereas images of alternative candidates, such as the Palaearctic *U. walckenaerius*, are not. Another uloborid candidate, the Palaearctic *Hyptiotes paradoxus*, is distinguishable by its different head shape and eye pattern, and by its shorter forelegs.

#### ZODARIIDAE

The authors have not knowingly encountered any representatives of this family in the course of their investigations. Rudy Jocqué (2011) has written of the Zodariidae that “[t]he vast majority of the spiders [in this] family are soil dwellers and many of them are obligatory ant-feeders. They therefore tend to be among the commonest spiders in arid and semi-arid habitats and are usually abundant in pitfall trap catches.” From material collected by the UAE Insect Project, Jocqué (2011) identified the four species listed in the index. He commented that, “considering the collection effort and the fact that pitfall traps were frequently used, the present collection is not particularly rich. This might indicate that the density of the populations of Zodariidae is very low.”

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Antonius van Harten (Vaiamonte, Portugal), coordinator of the UAE Insect Project and editor of the ground-breaking *Arthropod Fauna of the United Arab Emirates*, offered cautious encouragement, reviewed a draft introduction and provided us with summary information about the status of spider collections made by the UAE Insect Project and pending specialist publications.

Alireza Zamani of the University of Tehran, Iran, senior author of *The Checklist of the Spiders of Iran*,

undertook a review of our entire manuscript from a specialist perspective. His comments and information, grounded in his broad experience in a neighbouring jurisdiction, have greatly improved our final account.

Both Tony van Harten and Alireza Zamani strongly encouraged us to include in our account the additional published records attributable to collections by the UAE Insect Project, as well as the determinations solicited and published by H.G.B. Roberts (online), in order to try to bring together as many existing UAE records as possible in one place.

The assistance of Majid Moradmand of the University of Isfahan, Iran, another author of *The Checklist of the Spiders of Iran*, was critical in enabling us to deal with the unexpectedly large number of Sparassidae found to be present in the UAE.

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